COMPARATIVE STUDY OF SHORT TERM OUTCOME OF SINGLE LAYER UTERINE CLOSURE VERSUS DOUBLE LAYER UTERINE CLOSURE IN LOWER SEGMENT CAESAREAN SECTION

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CERTIFICATE

This is to certify that the dissertation titled " **COMPARATIVE STUDY OF SHORT TERM OUTCOME OF SINGLE LAYER UTERINE CLOSURE VERSUS DOUBLE LAYER UTERINE CLOSURE IN LOWER SEGMENT CAESAREAN SECTION"** is a bonafide work done by **Dr.V. SUJATHA** in the Institute of Obstetrics and Gynaecology (Madras Medical College) Egmore, Chennai in partial fulfillment of the university rules and regulations for award of MS degree in Obstetrics and Gynaecology under my guidance and supervision during the academic year 2012-2014.

Prof. DR.V.KANAGASABAI, M.D.,
Dean
Madras Medical College &
Rajiv Gandhi Govt.General Hospital,
Chennai – 3

Prof.DR.MEENA UMACHANDER,M.D.,DGO.
Director and superintendent
Institute of Obstetrics and Gynaecology,
Madras Medical College,
Chennai – 3.

Prof.DR.GEETHA PRASAD
M.D.,DGO.,
Guide
Institute of Obstetrics and Gynaecology
Madras Medical College,
Chennai -3.

DECLARATION

I solemnly declare that this dissertation titled **"COMPARATIVE STUDY OF SHORT TERM OUTCOME OF SINGLE LAYER UTERINE CLOSURE VERSUS DOUBLE LAYER UTERINE CLOSURE IN LOWER SEGMENT CAESAREAN SECTION "** was done by me at Institute of Obstetrics and Gynaecology, Madras Medical College during the year 2012 - 2014 under the guidance and supervision of **Prof.DR.GEETHA PRASAD, M.D.,DGO.,** This dissertation is submitted to The Tamil Nadu Dr.M.G.R. Medical University towards the partial fulfillment of requirements for the award of M.S. Degree in Obstetrics and Gynaecology (Branch -II).

Signature of the Candidate
Dr.V. SUJATHA
MS Post Graduate Student
Institute of Obstetrics and Gynaecology
Madras Medical College, Chennai -3.

Prof.DR.GEETHA PRASAD,M.D.,DGO.
Guide
Institute of Obstetrics and Gynaecology
Madras Medical College, Chennai -3.

Place :

Date :

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ABSTRACT

AIM OF THE STUDY

To compare the short term outcome of single layer closure of uterine incision from the double layer closure of uterine incision in lower segment caesarean section

PERIOD OF STUDY

January 2013 to December 2013

SAMPLE SIZE

200 subjects – 100 subjects randomized to single layer closure with vicryl with non closure of peritoneum and 100 subjects to double layer closure with peritoneal closure

SOURCE OF DATA

From the dept of obstetrics & gynaecology, Institute of Obstetrics &Gynaecology, Egmore ,Chennai.

RESULTS

The results of the study was the incidence was 34.4% .

The maternal age, parity, type of operation , booking status did not show any difference in both the groups.

The common indication of caesarean section was cephalo pelvic disproportion other indications was previous caesarean section ,fetal distress, failed Induction ,malpresentation like breech, tranverse lie, etc

The mean duration of surgery is 29.91 minutes in the study group and 37.56

minutes in the double groups and the average reduction in 7.6 minutes in the single layer groups with a significant p value of 0.000 .

The single layer uterine closure groups needed 1 to 2 extra hemostatic sutures whereas the control group needed 2 to 3 sutures with a p value of 0.000.

The perioperative hb fall in the study group was 0.86 and 0.94 in the control group with a significant p value of 0.058

Number of analgesics required in the study group of 1 to 2 doses and 2 to 3 in the control group

The febrile morbidity was 4% and 5% in both the groups. Wound infection was 4% and 8% in both the groups out of which 1 case required wound resuturing in the study group and 3 cases in the control groups.Each had 1 case of cystitis and 2 cases of paralytic ileus.The ambulation and duration of hospital stay was less in the study group compared with the double layer group.

CONCLUSION

Hence single layer uterine closure when compared with double layer closure had reduced duration of surgery ,reduced perioperative Hb fall ,reduced postoperative pain ,reduced need of extra hemostatic sutures with all bearing statistical significance and reduced febrile morbidity and wound infection in the single layer groups and hence reduced overall cost effective ratio.

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INTRODUCTION

Caesarean section is one of the oldest and most commonly performed surgery in the obstetrics .It had saved the lives of many mothers and fetuses in one hand and its inappropriate use can be a direct and preventable cause of maternal morbidity and mortality in other hand. Till today, it remains the only method by which babies are delivered when all other efforts to deliver vaginally fail.

DEFINITION

Caesarean section is an operative procedure whereby the fetuses are delivered through an incision made on the abdominal wall (LAPAROTOMY) and uterine wall (HYSTEROTOMY) of an intact uterus after the period of viability. The term is not applied to the delivery of the fetus through an abdominal incision that is lying free in the abdominal cavity following uterine rupture or in secondary abdominal pregnancy.

Caesarean section rates have been steadily increasing worldwide in the last 20 years. With the advent of effective antibiotics, increased safety of the operation, availability of blood

products, improved anaesthesia, broadening of indication of caesarean section had extended the use of caesarean section.

FACTORS FOR INCREASING CAESAREAN SECTION RATE

The rise of caesarean section rates have been attributed to the following factors

- increase in previous caesarean section
- use of intrapartum fetal monitoring and increased diagnosis of fetal distress
- decline in difficult operative or manipulative vaginal deliveries
- women's decision in making the mode of delivery
- identification of at risk mothers
- decline in vaginal breech delivery
- reluctance to attempt vaginal delivery after prior caesarean section.

The secondary rise in repeat caesarean section due to increase in primary section rates pose an additional factor for maternal morbidity and mortality due to associated placenta previa, accreta, urinary tract injuries, etc.,

Caesarean section has become the mode of delivery in atleast 1 in 5 deliveries. Hence it has become for any obstetrician to know the indication, technique and complications of caesarean section.

There have been many variations in the surgical technique of caesarean section. Each technique was aimed at reducing the time taken for surgery, amount of blood loss, reduce the incidence of intraoperative and postoperative complications, the cost effectiveness and thereby the overall economical burden on the health.

The present study aimed at evaluating and assessing the advantage of single layer closure of lower segment caesarean section using 1-0 vicryl without peritonisation from the conventional double layer closure with peritonisation in terms of intraoperative and short term postoperative outcomes There are number of studies that have reported the advantage of single layer closure of uterine incision over the double layer closure.

The conventional double layer closure technique was in use till 1980's. Since 1990's, single layer closure of uterine incision had come into existence in view of theoretical advantage of single layer closure with non closure of both visceral and parietal peritoneum from the double layer closure.

The theoretical advantage of single layer closure are

- lesser operating time
- lesser blood loss
- lesser tissue disruption
- less introduction of foreign material and hence less infection
- minimal tissue handling and lesser suture material use leads to lesser adhesion.

The suture material vicryl – delayed absorbable suture material, a copolymer of glycolide and l – lactide have superior properties on the wound healing and integrity when compared with chromic catgut like

- minimal tissue irritation
- higher retained tensile strength
- excellent handling property with good knot placement
- completely absorbed hydrolysis within 60 days

Generally, Pain is a complex phenomenon that precludes objective assessment. Since pain is a unique personal experience, only the patient can accurately describe the pain. visual analogue scale is used to assess the intensity of pain – a 10 cm line with anchors

indicating the extent of pain, left anchor represents “none” or “no” pain and the right anchor represents “severe” or ”worst possible “ pain.

Peritoneum heals by formation of new layers within 24-48 hrs. Hence if left unsutured,

- ❖ less postoperative pain and hence reduced need of analgesics
- ❖ minimal tissue handling leads to faster resumption of bowel activity
- ❖ lesser adhesion formation

On the other hand, cited reasons for peritoneal closure are

- ❖ anatomical restoration through tissue approximation
- ❖ reestablishment of anatomical barrier
- ❖ reduced incidence of wound dehiscence

The less postoperative pain after surgery has added advantage

- ❖ ameliorates maternal recovery
- ❖ early ambulation and thereby reduced risk of thromboembolism

Hence, non closure of peritoneum has less postoperative pain and reduced wound infection and shorter hospitalization period and better cost effective procedure.

AIMS AND OBJECTIVES OF THE STUDY

- To compare intraoperative and short term postoperative outcomes

    a. To compare the duration of surgery in both the groups

    b. To compare the amount of blood loss in both the groups
        - perioperative Hb fall

    c. To compare the intra operative outcomes
        - no of extra haemostatic sutures needed
        - no of analgesics required in the first 24 hrs postoperative period

    d. To compare the immediate postoperative complications
        - febrile morbidity
        - cystitis
        - wound infection
        - paralytic ileus
        - endomyometritis

REVIEW OF LITERATURE

Caesarean section also known as section caesarea, partus caesereus and hysterotomotoky

The term 'caesarean section' - a tautology meaning both words have similar meaning" to cut".

ETYMOLOGY

The explanations given for the origin of the word caesarean section are:

1. BIRTH OF JULIUS CAESER:

The origin of the term caesarean section had come into existence since the birth of JULIUS CAESER by caesarean delivery in 100 BC. But this explanation has its own flaw that the first performed operation was done on a dead or dying woman but the mother of Julius caeser – Aurelia had lived for several years after birth of Julius caeser.

2. LEX CAESEREA

Numa pompilius, a roman emperor promulgated a Roman law in 715 BC-LEX CAESEREA ,the law provided either an abdominal delivery in a dying woman with a hope to get a live baby or to perform postmortem abdominal delivery for separate burial.

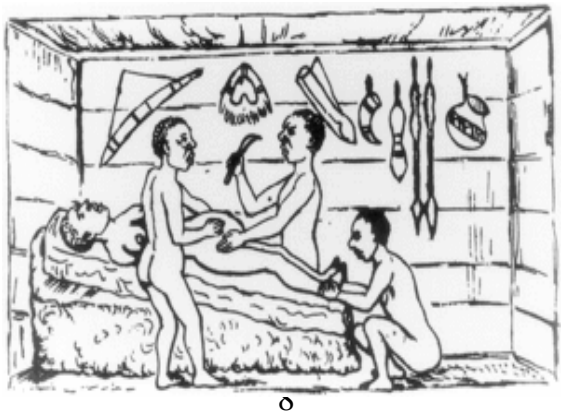
3. CAEDERE

The word caesarean section derived from latin verb CAEDERE meaning 'to cut'.

HISTORY OF CAESAREAN SECTION

HISTORY

In olden days, cesarean was performed to deliver the fetus on a dead or dying woman in an attempt to deliver a healthy baby and on the religious grounds to bury separately the mother and the fetus and as a last resort of delivery. Since the 19th century ,caesarean section was done for maternal or fetal indications.



In 1500 in Switzerland, the first written record of caesarean section was performed by Jacob Nufer on his wife after failure of attempting her vaginally by many midwifes. He performed the operation after obtaining permission from local bodies. The mother and the baby survived and the mother had birth of 5 other children.

Bindhusara, the second Mauryan emperor was by caesarean section after her mother accidently consumed poison and done with the intention of saving the life of the fetus.

Luzhong the sixth generation yellow emperor had six sons who were all delivered by cesarean.

Furbaide Ferbend was born by cesarean when his mother was murdered by his evil aunt.

Raymond Nonnatus had his surname nonnatus from Latin word meaning 'not born' was born by cesarean.

Rostam the National Legendary hero of Iran was born by cesarean has been written in the book Shahnameh in 1000 AC.

There was 90 to 100% mortality rate from the above procedures.

Reasons are

- Cesarean was performed on the exhausted, infected and severely dehydrated women in many hours of prolonged labour as a last resort.

- The uterus was left unsutured which resulted in life threatening hemorrhage and shock, septicemia.

Lebas first advocated uterine suturing in 1769 but then it was not popular atleast for a century.

In 1876, due to the problems of sepsis and hemorrhage, Eduardo Porro of Italy performed cesarean followed by subtotal hysterectomy . After hysterectomy, the cervical stump was sutured to the lower end of abdomen wound to control hemorrhage and to clear off the septic drainage. With the introduction of this procedure, the maternal mortality reduced to half of the initial 80 to 90%.

In the 19th Century, to reduce the risk of sepsis and preservation of uterus, Ferdinand Ritgen performed a lateral extraperitoneal cesarean to preserve the uterus in 1821. Fritz Frank modified the transperitoneal cesarean by suturing the visceral peritoneum to the margins of abdominal wall incision for the septic drainage. In 1881, Ferdinand kehrer first introduced the lower segment caesarean section

emphasizing on double layer closure of uterine incision, first layer sutured on the uterine muscle and the second layer suturing on the peritoneum.

FERDINAND KEHRER

In 1882, Max Sanger performed classical caesarean section which was a longitudinal incision and he sutured the uterine incision with silver wires . After the introduction of classical section, Kehrer's lower segment caesarean section had lost its popularity.

In 1988 Cameron from Britain adopted classical section in rachitic dwarfs with cephalo pelvic disproportion and great success was achieved in 22 of 23 classical section in the next 2 years.

In 1911, a dramatic change in the history of caesarean section was made by MUNRO KERR in the lower segment caesarean section

which was originally performed by Munro Kehrer focusing on the advantages of lower segment caesarean section as

- lower uterine segment less retractile and hence better wound healing
- decreased blood loss
- decreased rate of scar rupture in the subsequent pregnancy

MUNRO KERR

The first woman who did Caesarean section on herself –INES RAMIREZ in March 5th 2000.

HISTORY OF CAESAREAN SECTION- OPERATIVE TECHNIQUE

ABDOMINAL INCISION

- Blundell-recommended high longitudinal incision
- Lauverjat-transverse incision below the false ribs

UTERINE INCISION

❖ **LONGITUDINAL INCISION**

- Laveret in 1770-made a large uterine incision for easy delivery
- Mercurio –oblique incision
- Millot in 1975-on the lateral aspect of the fundus of the uterus
- Kilian Bonn- diagonal incision
- Cohenheim in 1881 –long incision on the posterior surface of the uterus

❖ **TRANSVERSE INCISION**

- Lauverjet in 1788-made a high transverse incision
- Heide kehrer-low transverse incision at the internal os level
- Fritsch of Bonn-transverse incision on the fundus

UTERINE INCISION - SUTURE TECHNIQUES

- Lebas-first to close the uterus and used only three stitches
- Weigell-single layer closure
- Frank E of USA-used silver wire
- Rodenstein in 1871-used silk

ABDOMINAL WOUND

- Hamilton-recommended entire wound closure
- Cohenheim-abdominal wound drainage through the pouch of douglas

LOWER SEGMENT OPERATION

This was first suggested by Robert Wallace Johnson in 1786

Freiderick Benjmin Osiander in 1805 & JCG Joerg in 1806 performed lower segment transverse incision and it was not success and hence recommended low vertical incision.

Ferdinard Ritgen & L A Baudelocque of France adopted a method of delivery by extraperitoneal route through an incision made on the vagina rather than on the uterus

Latzko of Vienna had two maternal deaths of 30 cases done through extraperitoneal route.

Louis Portes in 1923 –done a caesarean method to combat the infection rate by two stages with an interval of 20-57 days. In the first stage, unopened uterus delivered through the longitudinal abdominal incision, incision made on the uterus and products delivered, uterus closed and the abdominal incision closed by leaving the uterus outside and monitored for infection, if infection seen Porro's technique of subtotal hysterectomy after caesarean section done otherwise uterus put into the pelvic cavity after sometime.

CAESAREAN SECTION OPERATIVE TECHNIQUE – CURRENT STATUS

In 1881, Kehrer was the first to adopt lower segment incision but was popularized by Kerr in 1926 and been in use till now .Uterine closure usually done with conventional double layer closure with running locking sutures with second imbricating layer Since 1990 single layer closure of uterine incision has become popular for its theoretical advantage but few studies still reported its poor outcome

with regard to the scar dehiscence, uterine rupture in the subsequent pregnancy and poor trial of scar.

HEALING OF UTERINE WOUND

WILLIAMS 1921- Uterine wound healing occurs through MUSCLE FIBRE REGENERATION and not by scar tissue regeneration. This was proved by inspecting the scar tissue in an unopened uterus during repeat caesarean section which confirmed no visible scar or any deep or shallow furrows on the external and internal surfaces of the uterus.

AIM OF UTERINE WOUND CLOSURE

- The prime aim of uterine closure in caesarean section is CLOSURE OF THE RENT OF THE UTERINE WOUND and PERFECT HEMOSTASIS. Both the conventional double layer closure and single layer closure achieves this.
- The main purpose of the uterine suturing is to resist the stress and strain on the uterine wound until the healing gives its intrinsic strength

FACTORS INFLUENCING THE UTERINE WOUND HEALING AND THE STRENGTH OF THE SCAR

- SUTURE METHOD- single or double layer closure
- SUTURE MATERIAL- chromic catgut or vicryl
- SUTURE TECHNIQUE-approximation of cut margins excluding decidual layer.
- GENERAL FACTORS-general health and nutritional status
- LOCAL FACTORS - infection

Postpartum involution of the uterus results in loosening of the sutures. Therefore once hemostasis is achieved ,a double layer closure does not have significant advantage over the single layer closure method.

The full thickness healing of the uterine wound is achieved through good approximation of the cut margins for a good scar to withstand the stress of labour in future may not be achieved in the conventional double layer or single layer closure. This is due to the nature of the lower segment and the difficulty in identifying the cut margins due to the process of labour. This leads to poor healing of the uterine wall and results in thinned out scars. Hence full thickness

approximation of the cut margins results in full thickness healing of uterine incision.

Second layer suturing introduces additional needle punctures, hence additional suture material produces more tissue ischaemia and necrosis. The introduction of foreign material acts as a nidus for infection and postoperative adhesion formation .The lesser tissue disruption results in stronger wound and thus reduced risk of scar rupture in subsequent pregnancy.

SCHWARTZ et al & later SIEGLE 1912

- Conclusion of the study is that if the cut margins are closely apposed, the proliferation of connective tissue is minimal and normal relation of the smooth muscle to the connective tissue gradually reestablished. Hence approximation of cut margins is one of the important factor in the healing of the wound in the puerperal uterus.

SHAHID ISHAD RAO et al PAKISTAN JOURNAL MEDICINE RESEARCH Vol 42(2003)

- A study conducted over a period of 4 yrs from JAN 1996 to DEC 2001 in the Dept of OBG in the Niftar Hospital, Multan on the impact of single and double layer closures on the uterine rupture. Conclusion of the study was single layer closure with vicryl has scar strength equal to that of the double layer closure and single layer closure associated with reduced operating time and reduced postoperative morbidity.

STUDIES SUPPORTING SINGLE LAYER CLOSURE

Kopper et al (1983)

- Reported decreased postoperative morbidity with single layer closure

Winker et al (1986)

- Observed reduced infection and shorter hospitalization with single layer closure

Lal K Tsomo et al (1987)

- Conducted study by comparing 50 subjects with single layer interrupted sutures from 50 subjects of double layer closure at 3 months postpartum hysterography at 2 nd and 6 th weeks .The study reported 82% of double layer closure women had minor or major abnormality in the scar. Only 26% of single layer closure women had abnormal findings. Hence, the study showed better healing and sound scar with single layer closure.

Hauth et al (1992)

- Study conducted in 906 women by randomization to single and double layer closure and found that no significant difference was noted for the superiority of double layer from the single layer closure method and hence suggested single layer closure can be done whenever feasible.

Jelsema et al (1993)

- Conducted in 100 women and the results of the study was single layer group needed extra hemostatic sutures and reduced operating time

Sood Atul Kumar et al (2005)

- 208 women randomized to single and double layer closure. The study results were reduced operating time, reduced intra operative blood loss, reduced febrile morbidity, shorter hospitalization. Extra haemostatic sutures, cystitis, wound infection and post operative pain did not had statistical significance.

Durn wald et al (2005),American Journal of OBG 2005

- A retrospective study conducted in 768 women undergone primary section by Misgav Ladach technique on the uterine rupture and abnormal placentation. The study showed there was no rupture in single layer closure and 0.8% in double layer closure.

Hammar Benjamin MD OBG Oct 2007 Vol 110 Issue AOG

- Conducted in 30 women on the uterine scar remodelling by ultrasonography and the results were progressive decrease in uterine scar thickness with both the single and double layer closure.

Cochrane Data Base Review 2008(issue 3) by Dodd et al

- Reviewed fifteen trials involving 3992 women from different countries and the results from ten trials were significant reduction in mean blood loss (three studies, 527 women, MD-70.11,95% CI-101.61 to 38.6), reduced operating time (from studies, 527 women, MD-7.43, 95% CI-8.41 to 6.46), post operative pain and shorter hospitalization in single layer groups.

Razia Iftikar, Baqai Medical University and Hamdard University hospitals in Pakisthan April 2007-2010

- A study on single layer closure with the Joel – Cohen incision from the double layer closure showed single layer closure had reduced operating time (mean 10 mins) ,reduced blood loss (mean 100 ml), only 5 subjects had febrile illness and shorter hospitalization period of 36 hrs in 97 cases.

Caeser Study

- A multicentric randomized controlled trial compared the techniques of caesarean section through

  a . single layer closure versus double layer closure

b . non closure versus closure of peritoneum

c . restricted versus liberal use of sub sheath drain

The study assessed the following short term outcome measures - wound infection, febrile morbidity, endometritis, post operative pain, blood transfusion given

Long term outcome measures assessed - uterine rupture, uterine scar dehiscence, placenta accreta, percreta, adhesion, fibrosis of anterior abdominal wall, readmission to hospital within six weeks of caesarean section

Roberge et al 2011

- A study evaluated nine studies which included 5810 women , association between the single layer and double layer closure with subsequent risk of uterine rupture and the results showed no significant difference in uterine rupture during trial of scar after single layer closure from that after double layer closure

STUDIES SUPPORTING DOUBLE LAYER CLOSURE

Bujold et al 2010

- Compared the risk of uterine rupture with single and double layer closure and 4-fold risk of uterine rupture with single layer than the double layer closure. The increased incidence in the study was due to the

  1) Type of suture material - chromic catgut was used

  2) Delivery interval -less than 2 yrs

Shery Boschet march 2002

- Showed double layer closure safer and increased risk of scar rupture in single layer closure than the double layer closure

ANATOMY AND PHYSIOLOGY OF UTERUS

ANATOMY

Uterus is a pear shaped muscular organ situated within the pelvis in nulliparous women between the bladder anteriorly and the rectum posteriorly.It varies in size and shape .The length of the uterus in nulliparous women is 6-8 cm and 9-10 cms in multiparous women .It weighs about 70 g At term it fills up greater part of the abdominal cavity and undergoes considerable hypertrophy and it measures about 32 cm and weighs about 1 kg.

Consists of two unequal parts

- Body or corpus-upper triangular portion
- Cervix-lower cylindrical portion projecting into vagina
- Isthmus-portion of the uterine cavity between the internal cervical os and the endometrial cavity Obstetrical significance it forms the lower uterine segment during pregnancy

Uterine Body Or Corpus

Composed of three layers

- ❖ Serous layer-peritoneal covering covers anterior two-thirds and the whole of the posterior surface of the uterus
- ❖ Myometrium or muscular layer-consists of non-striated muscle fibres arranged in three layers
  a. Outer longitudinal layer runs anteroposteriorly over the fundus which is continous with the fallopian tube and ligaments
  b. Inner circular fibres prominent near the orifices ,tubal ostia and internal os
  c. Interlacing muscle fibres in the shape of "figure of eight" around the blood vessels which act as living ligatures to control hemorrhage
- ❖ Endometrium-mucosal layer that lines the uterine cavity

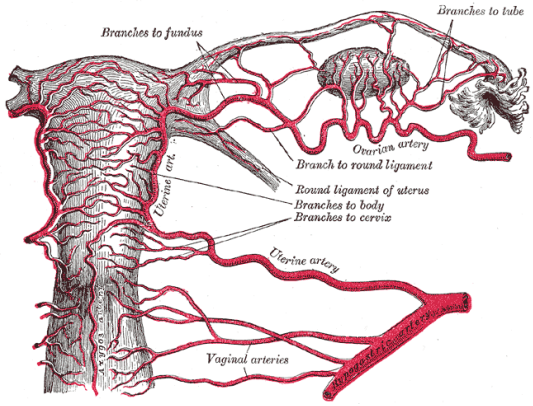
  varies in thickness and measures from 0.5 mm to much as 5 mm, composed of surface epithelium ,glands and interglandular mesenchymal tissue

Blood Supply Of The Uterus

Uterus derives its blood supply from the uterine artery principally and the ovarian arteries .Uterine artery arises from the anterior branch of the internal iliac artery . It runs downward, forward

and medially in the base of the broad ligament ,crosses above the ureter and passes to the side of the uterus . Just before the main branch turns upward, a small branch cervicovaginal artery descends and supplies the lower portion of the cervix and the upper portion of the vagina. The main artery proceeds upwards in the broad ligament along the lateral border of the uterus, gives off many branches , and finally sends a branch to anastomose with the ovarian artery, second branch supplies the fallopian tube, and a third branch into the fundus.

The main artery gives of branches into the myometrium called the arcuate arteries .These arteries run obliquely and run parallel to meet the arcuate arteries of the opposite side encircling the uterine body .From the arcuate arteries ,radial arteries run into the endometrium divide into short basal arteries and long coiled spiral arteries .The basal arteries supply the basal endometrium. The coiled spiral arteries supply the middle and superficial parts of the endometrium.



Venous Drainage

The veins emerging from the uterine fundus , fallopian tube and ovary form the pampiniform plexus .From this ,two ovarian veins emerge and fuse to form the single ovarian vein, which on the left side joints the renal vein and on the right side joins the inferior vena cava. The uterine veins accompany the uterine artery and end in the corresponding internal iliac vein.

Lymphatic Drainage

The lymphatics of the body of the uterus –two groups of lymph nodes.

- one drains into the internal iliac nodes
- other joining the lymphatics from ovarian origin ,terminates in periaortic lymph nodes.

Nerve Supply

The nerve supply of the uterus derived from sympathetic nervous system and partly from the cerebrospinal and parasympathetic systems. Sympathetic system through hypogastric plexus which arises from the aortic plexus. Parasympathetic system by the pelvic nerve which consists of fibres from second ,third and fourth sacral nerves

and ends in the ganglion of Frankenhauser. Sympathetic fibres cause muscular contraction and vasoconstriction whereas the parasympathetics inhibit contraction lead to vasodilatation.

Types of Caesarean Section

1. **Based on Timing**

   Elective -in a woman who has not gone into labour

   Emergency – done in a laboring women

2. **Based on The Number Of Operation**

   Primary- done for the first time

   Repeat - done for the subsequent pregnancies

3. **Based on The Type Of Operation**

Lower segment caesarean section – extraction of the baby is done through an incision made in the lower segment through a transperitoneal approach

Classical caesarean section – extraction of the baby is done through an incision made in the upper segment of the uterus

4. **Based on the Opening of Peritoneal Cavity**

Transperitoneal –Operation is done by opening of the peritoneum before incising the uterus

Extraperitoneal – The peritoneal cavity is not opened and the lower uterine segment reached either laterally or inferiorly by reflection of the vesico-uterine pouch

Indications of Caesarean Section

The commonest indications are

- -presumed fetal compromise 22%
- -failure of progress of labour 20%
- repeat caesarean section 14%
- breech presentation 11%
- maternal request 7%

Absolute Indications

- -severe degree CPD
- -fibroid in the lower uterine segment or cervix
- -ovarian cyst incarcerated in the pelvis
- -cancer cervix

- -pelvic bone tumours
- -cervical or vaginal strictures –indivisable or undilatable
- -extreme sacculation of the uterus

Elective Indications

- -twin pregnancy with first twin breech
- maternal HIV
- -grade 3 and 4 placenta previa
- -primary genital herpes with visible lesions at the time of labour or ruptured membranes
- -term singleton breech , failed or contraindicated external cephalic version

Non-Elective (Emergent) Indications

- -dystocia
- -fetal distress
- -failed induction of labour
- -failed trial of forceps
- -failed trial of labour
- -cord prolapsed
- -antepartum hemorrhage

- -major degree of placenta previa with continous bleeding
- -fulminating pre eclampsia or eclampsia with unfavourable cervix

Nice Guidelines ,2004 –Indications

- immediate threat to the life of the woman or fetus
- maternal or fetal compromise which is not immediately life threatening
- no maternal or fetal compromise ,but needs early delivery
- delivery timed to suit woman or staff

Classical Caesarean Section

Indications in present day obstetrics much limited and done only under forced circumstances like

Lower segment approach is risky –

- big fibroid on the lower segment
- cancer cervix
- severe degree of placenta previa with engorged
- vessels in the lower segment

Caesarean Delivery on Maternal Request(CDMR)

The mother counseled about the pros and cons of the caesarean deliveries. The concept of CDMR has made a significant rise in the caesarean section and thereby repeat caesarean section.

Contraindications

- -trisomy 13
- -trisomy 18
- -anencephaly

Elective Section -Need Not Be Offered

- twin pregnancy with first twin cephalic
- preterm
- hepatitis C &B
- recent genital herpes at term with no visible lesions

Technique of Caesarean Delivery

The steps of caesarean section have been standardized over the years

Pre-operative care

Women in labour ideally given clear fluids

Women planned for elective section ,preferable to stop oral intake for atleast 8 hrs prior to procedure Hair clipped on the day of surgery

Document fetal heart tones prior to procedure

Opening the abdomen

Skin incision

Vertical incision -

Midline

Paramedian

Transverse incision-

Pfannensteil-two finger breadths above pubic symphysis

Joel-Cohen-3 cm below the line joining the anterior superior iliac spine

Maylard - subumbilical incision

Cherney – transverse muscle cutting incision

Vertical incisions generally allow faster abdominal entry

- Associated with less bleeding and nerve injury

Midline vertical incisions –greater risk of

- Postoperative wound dehiscence and incisional hernia

Low transverse incision -

- most commonly used
- less postoperative pain
- greater wound strength
- better cosmetic results

Breghella et al 2005

- Compared the transverse with vertical incision and found transverse incision associated with greater wound strength and better cosmetic results

Joel –Cohen incision-

- associated with less fever, pain and analgesic requirements, less blood loss, shorter duration of surgery and hospital stay (Mathai and Hofmeyer 2007)

Opening The Peritoneum

Small incision made on the peritoneum and extended either by sharp or blunt dissection

Raising The Bladder Flap

After the peritoneal cavity opened, lower part of the uterus exposed . Dextrorotation corrected. UV fold of peritoneum opened and bladder pushed down Raising bladder flap useful in cases where adhesions may not allow access to the lower uterine segment.

Uterine Incision

Aware of the placental position

Incision-

- **Transverse-** 1 cm below the upper margin of the peritoneal reflection
- **Vertical–** performed in the lower noncontractile uterine segment

Transverse lower segment incision(Kerr incision)

Advantages:

- ❖ Less blood loss
- ❖ Less need for bladder dissection
- ❖ Easier approximation
- ❖ Lower risk of rupture in subsequent pregnancies
- ❖ Lateral extension leads to major blood vessels

Disadvantages:

- ❖ Extension of the incision may become 'J' or inverted 'T' shaped incision and go into the lateral fundus and the angles are poorly vascularised resulting in a weaker uterine scar

The hysterotomy incision extended by blunt expansion using fingers Blunt expansion has reduced blood loss and reduced extension of incision Magann et al 2002 , Sekhavt et al 2010 -found that sharp dissection is associated with greater blood loss

Vertical Incision

Two types

- ❖ Low vertical (kronig,Dee Lee or Cornell)
- ❖ Classical vertical

Disadvantages

- extension upwards into the fundus or downwards into the bladder, cervix and vagina
- higher incidence of uterine rupture (4 to 9 %)

Delivering The Fetus

After the uterine incision made ,hand is used to scoop the head up and bring it to the level of the incision .The head is then extracted through the incision. To facilitate the delivery of the fetus , transabdominal fundal pressure applied by the surgical assistant.shoulders are delivered and the rest of the body is delivered cord clamped and cut and the baby is handed over to paediatrician

Delivery Of Deeply Engaged Head At Caesarean

Patwardhan Technique When the head is impacted deep in the pelvis in cases of occipito- posterior or occipito transverse , fetus shoulder is found at the level of the uterine incision. As soon as the uterine incision made, anterior shoulder popped out through the incision and then the posterior shoulder delivered, hooking through both the axillae and with gentle traction, body of the uterus is brought out of the uterus.

Extension Of Uterine Incision Incision can be extended into an inverted ‘T’ or ‘J’ shaped

Delivering The Placenta

Spontaneous delivery of the placenta is recommended.

Ensure entire placenta along with the membranes is removed

Cochrane Data Base Review(Anorlu et al 2008)

- Showed manual extraction results in more postoperative endometritis, greater blood loss, and lower post partum hematocrit

Prevention Of Uterine Hemorrhage

Uterus is massaged immediately after delivery of the placenta.

Oxytocin is given in a dose of 10-20 units in 500 ml of normal saline.

Closure Of The Uterine Wound

Exteriorisation of the uterus facilitates easy repair of the uterine incision .

- useful in exposure of the incision is difficult

- need for hemostasis during excessive bleeding
- easy access to the tubes for tubal ligation

Coutinho and Colleagues (2008)

- Found no significant difference between extra abdominal and intra abdominal repair of the uterine incision and number of sutures required was lower and shorter surgical repair with extra abdominal repair.

Technique of closure of the uterine wound

Conventional double layer closure method is practiced.the first layer is closed with a locking suture to ensure hemostasis followed by second imbricating layer. However single layer closure of uterine incision also followed wherever feasible .

Abdominal Irrigation

There is no necessity for intraabdominal irrigation **(Harrigill et al 2003)**

Inspection Of Adnexae

To ensure that a cyst or mass is not missed

Closure Of Peritoneum

The non closure of parietal peritoneum has lesser postoperative pain when compared with closure of peritoneum

Closure Of Abdominal Wall

Fascial closure done with delayed absorbable or permanent suture. Subcutaneous tissue closure done in depth of >2 cms. Skin closure by mattress or subcuticular sutures

Wound Dressing

Light protective dressing applied and dressings removed after 48 hrs

Prophylactic Antibiotics

Ampicillin and first generation cephalosporins are equally efficacious in reducing postoperative wound infection and endometritis

Postoperative Care

Adequate pain relief

Intravenous fluids are continued till the patient tolerates oral feeds

Early intake of oral fluids encouraged

Advantages

- faster resumption of bowel activity and reduced hospital stay

Intravenous antibiotics continued for three days

Early ambulation advised

Sutures are removed on the seventh or eighth postoperative day

MODIFIED TECHNIQUE FOR LOWER SEGMENT CAESAREAN SECTION :

THE MISGAV LADACH METHOD

First described by Dr Michael Stark and his colleagues at the Misgav Ladach Hospital in Jerusalem and hence the name.

The method was based on the principle to minimize the tissue trauma by reducing the unnecessary dissection.

Steps of the procedure

- -Joel- Cohen incision
- -uterovesical pouch opened and bladder pushed down by blunt dissection

- -small transverse incision made in the lower uterine segment and the incision stretched manually
- uterus exteriorized
- single layer uterine closure
- visceral and parietal peritoneum left unsutured
- abdominal closure done

A number of prospective studies have compared Misgav Ladach method with conventional Pfannensteil method and showed shorter operating time, less wound infection, less postoperative pain and febrile morbidity

INTRA OPERATIVE COMPLICATIONS OF CAESAREAN SECTION

Overall intra operative complications reported as 12-15%

Complication rate significantly higher in the emergency section than the elective section

Hemorrhage

Primary

Secondary

Average blood loss is about 1000ml ,more than twice as the vaginal delivery

Risk factors

General anaesthesia, Placenta previa, Macrosomia, Antepartum hemorrhage, Prolonged labour, Secondary arrest

Hemorrhage may be due to

- Uterovesical laceration
- Uterine atony
- Uterine inversion

Anaesthesia Related

- Difficult intubation
- Hypotension
- Mendelson's syndrome

Injury To Abdominal Viscera

Urinary tract injury

Bladder injury is the commonest urinary tract injury

Occurs in 0.3% of caesarean deliveries

Risk increased in repeat caesarean sections-four-fold compared to primary section due to adhesions

Other risk factors

- Emergency caesarean section
- Labour before caesarean
- Attempted vaginal birth before caesarean
- Concurrent uterine rupture

Some degree of hematuria may be seen

If in doubt, continous bladder drainage for 5 days

Intraoperatively,intravenous injection of indigo carmine or instillation of methylene blue into the bladder to confirm the diagnosis

Bladder repair is done in two layers with 3-0 vicryl and continous bladder drainage for 7 to 10 days

Bowel Injury

Occurs with previous abdominal surgery

Intestinal loops with omentum may get adherent to the previous incision may get injured inadvertently while opening the abdomen. Serosal or partial thickness tears of the small bowel are repaired with interrupted 2-0 vicryl sutures.

Full thickness injury repaired in two layers with interrupted 2-0 or 3-0 vicryl for the first layer and 3-0 silk for the second layer

If missed on the table , the patient may develop features of generalized peritonitis like abdominal pain , tenderness, distension and ileus postoperatively

Postoperative Complications

The risk of infectious morbidity is greater in emergency caesareans than the elective sections.

Risk factors-

Duration of labour, ruptured membranes ,intrapartum manipulations.

Infection

The most common infections are

Endometritis -most common postoperative infection after caesarean delivery incidence higher of 20-40 times in Caesarean section than the vaginal delivery

Risk Factors - Prolonged rupture of membranes,prolonged labour,multiple vaginal infections,obesity

prophylactic antibiotics reduces the incidence of endometritis by 60%

Pulmonary complications

- ❖ atelectasis
- ❖ pneumonitis

Wound infection

incidence of wound infection is1-4.5%

The common organisms are staphylococcus aureus, anaerobes, gram negative organisms like streptococcus faecalis

Paralytic ileus

Presenting features are painless uniform abdominal distension, vomiting ,non passage of flatus, absent bowel sounds and electrolytes imbalance Plain X-ray abdomen may help in the diagnosis –evidence

of gas in both the small and large bowel. Patient kept nil oral, gastric decompression,iv fluids and electrolyte correction

Bowel activity usually recovers within 3-4 days

Urinary tract infection

Complicates 3-6% of women

The most important aetiological factor is the preoperative catheterization

Septic pelvic thrombophlebitis

Venous thromboembolism

- Life threatening complication
- Depends on the size of the clot
- Diagnosis established by spiral CT,pulmonary arteriography or ventilation perfusion scan
- Supportive treatment,Heparin,embolectomy or thrombolysis may be life saving occasionally

Foreign body

Major source of law suits and medical malpractice claims Risk is increased in emergency surgeries and in patients with higher BMI.

Review of medical records showed sponges accounted for 76% and instruments for 31% cases

Caesarean Hysterectomy

Indications

Intractable uterine hemorrhage not controlled by conservative methods,placenta percreta and uterine rupture

The risk is 5-10 times higher with caesarean section than following vaginal birth

A subtotal or total hysterectomy may be performed

Subtotal hysterectomy

- In continuing obstetric hemorrhage where uterus has to be excised quickly and to ensure hemostasis

Total hysterectomy

- Lower segment tear had extended into the cervix
- Bleeding from placenta previa

Complications

- Urinary tract injury
- Relaparotomy
- Massive transfusion and disseminated coagulopathy
- The fatality rate is about 4%

Fetal Risks In Caesarean Section

The risk of fetal laceration is about 2%

The risk of intrapartum asphyxia is less with elective section

Respiratory complications and Iatrogenic prematurity contribute to neonatal morbidity.

Hence elective caesarean sections are performed at 39 plus weeks to minimize the risk of neonatal respiratory distress syndrome.

Perinatal mortality ranges from 5-10%

Deaths are mostly in emergency sections and the complications for which the procedure is done like asphyxia due to preexisting RDS, prematurity, infection, intracranial hemorrhage

Global Scenario – Caesarean Section Rate

WHO 2005 report says,

> Highest incidence in china of 46% , followed by Brazil 41.7%, Vietnam 36% , USA 31%, Italy 33% , India 18%, Sweden 10%

Indian Scenario – Caesarean Section Rate

The incidence of caesarean section births is 1.8% . there is 16.7% change every year in caesarean section rates in India. The southern states of India has higher prevalence rate of caesarean sections than the northern states which has < 5% (5 – 15%)

Indian Council Of Medical Research Study showed caesarean section rate of 13.8%.

B .J.O of obstet & gynaecol (2003) – caesarean section rate of 50% and about 1.7 times higher in private sectors.

METHODOLOGY

Ethical committee clearance was obtained from Institute' s Ethics Committee, Madras Medical College & Research Institute ,Chennai -03. Two hundred subjects undergoing caesarean section are selected based on the Inclusion and Exclusion criteria .Each subject is allocated to either groups

Inclusion criteria

emergency or elective caesarean section after 37 completed gestational weeks done for

- cephalopelvic disproportion
- Non progress of labour
- Failed induction
- Malpresentation like Breech,transverse lie
- Fetal distress
- Previous LSCS

Exclusion criteria

- Chorioamnionitis
- Coagulation disorders
- Severe anaemia of Hb <7gms
- Antepartum hemorrhage

- Multiple pregnancy

History of period of amenorrhoea, last menstrual period, onset of labour pain ,h/o bleeding per vaginum or draining per vaginum noted ,menstrual history, past history ,previous obstetric history were noted General and Systemic examination performed, anaemia, pedal edema noted Abdominal examination was performed to confirm gestational age , lie, presentation, position of the fetus noted. Per vaginal examination done to note the cervical effacement, dilatation, membrane status , station of the presenting part , pelvic assessment done.

Investigations like Hb , blood grouping and typing ,H I V,Hb s Ag were sent.

Informed consent is obtained from all the women .100 women randomized to single layer uterine closure with 1-0 vicryl with nonclosure of both visceral and parietal peritoneum and 100 women to conventional double layer closure with chromic catgut with peritonisation.

Preoperative procedure

Consent for the procedure obtained

Preparation of abdomen and perineum

Elective caesarean section patients are kept nil oral for 8 hrs

Indication of the procedure noted

High risk factors like PIH , PROM ,GDM, anaemia are noted

IV line secured and blood for cross matching taken

Pre op Hb noted

Inj.ampicillin 1g iv after test dose given

Inj. Ranitidine 50 mg iv and Inj .perinorm 2 ml im stat given

Bladder catheterized

Anaesthesia given according to anaesthesiologists choice-spinal or epidural or general anaesthesia

Procedure

Under anaesthesia patient in supine position with 15' tilt to the left side

Time noted from skin opening to skin closure

Abdomen opened by Pfannensteil incision

Blunt dissection of the layers carried out

Peritoneum opened

Dextrorotation corrected

UV fold of peritoneum identified ,cut and bladder pushed down

Lower uterine segment identified

Lower segment caesarean section done

Baby delivered

Inj. Syntocinon 10 units added to the drip

Cord clamped cut and baby handed over to paediatrician

Spontaneous separation of the placenta awaited

Time noted from uterine closure to skin closure

Uterine incision closed with 1-0 vicryl by continous locking sutures with nonclosure of visceral and parietal peritoneum in single layer groups and with 2 or 1 chromic catgut by double layer with peritoneal closure in double layer groups.

No of hemostatic sutures needed- noted Extension of incision , PPH noted Rectus sheath closed with 1-0 prolene Subcutaneous tissue sutured if depth more than 2 cms Skin approximated either by mattress or subcuticular stitches

Postoperative monitoring

All subjects are monitored in the postoperative ward

Half hrly pulse chart, fourth hrly BP monitored

Any bleeding per vaginum observed for the first 24 hours

Early oral fluids 8 hrs after surgery followed by liquid diet on the 1 st

postoperative day and semisolid diet on the 2 nd postoperative day

Early ambulation advised

No of analgesics needed in the immediate postoperative period noted

Post op Hb taken on the 3 rd postoperative day

The following postoperative outcomes are monitored in both the groups.

Febrile morbidity –an increase in the temperature of 98.4'c on two occasions with two recordings 6 hrs apart excluding the first 24 hrs of surgery, appropriate antibiotics started,

Cystitis - cultures sent and appropriate antibiotics started

Wound infection - in the form of wound induration, erythema,discharge noted

Endomyometritis -fever, foul smelling lochia, uterine tenderness noted

Paralytic ileus – abdominal distention ,fever

Number of analgesics required in the first 24 hrs noted

Sutures are removed on the 7^{th} postoperative day

Duration of hospital stay noted

Continous variables are analysed by Student t test . Chi-square test or Fischer exact test used to analyse the categorical data

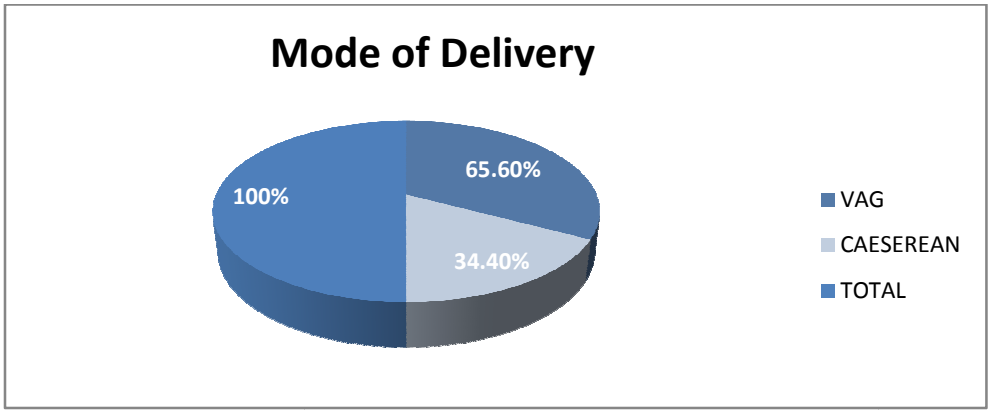
RESULTS AND ANALYSIS

The present study was done in department of obstetrics & gynaecology, INSTITUTE OF OBSTETRICS & GYNAECOLOGY, Egmore . This study conducted from January -2013 to December 2013. This study included two hundred subjects . The study groups (group I) consists of 100 cases , under went single layer closure of uterine incision with non closure of peritoneum with vicryl and the control groups(group II) consists of 100 cases who underwent double layer closure of uterine incision with peritonisation in both the group. Abdomen opened by Pfannenstiel incision.

Total no of vaginal deliveries and Caesarean section in our hospital from January 2013 to December 2013 were as follows

TABLE:1 MODE OF DELIVERY

Mode of delivery	**No of cases**	**Percentage %**
Vaginal deliveries	7396	65.6%
Caesarean deliveries	3876	34.4%
Total	11,272	



Total number of deliveries during the period of the study in our hospital was 11,272 giving the incidence of vaginal deliveries 65.6 % and caesarean deliveries 34.4 %

TABLE 2 SHOWING THE MATERNAL AGE IN BOTH THE GROUPS

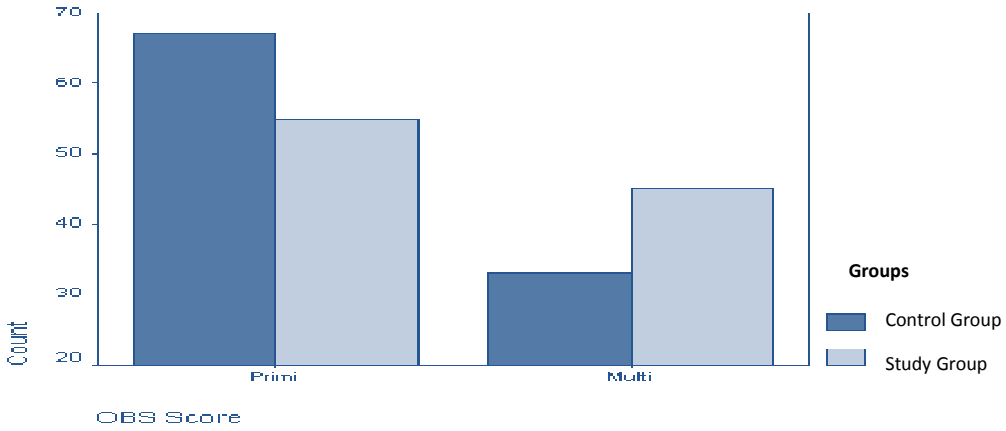
	Groups	N	Mean	Std. Deviation	Std. Error Mean
Age in years	Study Group	100	24.71	3.891	.389
	Control Group	100	25.07	3.331	.333

The mean age group in the study group is 24.71 and in control group is 25.07

TABLE 3 SHOWING THE DISTRIBUTION +OF THE OBSTETRIC SCORE OF BOTH THE GROUPS

			Groups		Total
			Study Group	Control Group	
OBS Score	Primi	Count	55	67	122
		% within OBS Score	45.1%	54.9%	100.0%
		% within Group	55.0%	67.0%	61.0%
	Multi	Count	45	33	78
		% within OBS Score	57.7%	42.3%	100.0%
		% within Group	45.0%	33.0%	39.0%
Total		Count	100	100	200
		% within OBS Score	50.0%	50.0%	100.0%
		% within Group	100.0%	100.0%	100.0%

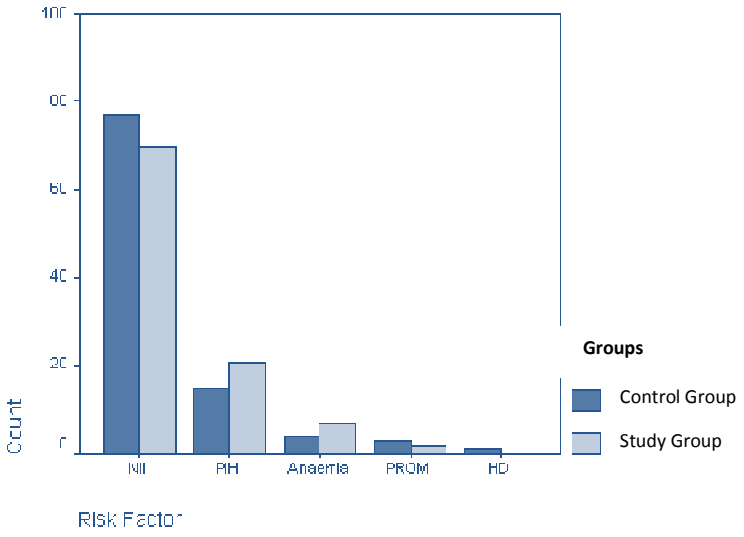
BAR DIAGRAM SHOWING THE COMPARISON OF BOTH THE GROUPS



The incidence of primigravidae subjected to single layer closure (study I) is 45.1% and that of the double layer closure (study II) is 54.9% and for Multigravida is 57.7% and 42.3% respectively

TABLE 4 SHOWING THE COMPARISION OF RISK FACTORS AFFECTING THE OUTCOME OF THE PROCEDURE BETWEEN THE GROUPS

Risk Factors		Groups		Total
		Control Group	Study Group	
	% within Risk Factor	47.60%	52.40%	100.0%
PIH	Count	21	15	36
	% within Risk Factor	58.30%	41.70%	100.0%
Anaemia	Count	7	4	11
	% within Risk Factor	63.60%	36.40%	100.0%
PROM	Count	2	3	5
	% within Risk Factor	40.00%	60.00%	100.0%
HD	Count	0	1	1
	% within Risk Factor	0.00%	100.00%	100.0%
Total	Count	100	100	200
	% within Risk Factor	50.00%	50.00%	100.0%



BAR DIAGRAM SHOWING THE RISK FACTORS OF THE GROUPS

In the study group (group I) ,PIH -58.3%, anaemia -63.6% , PROM -40% and in the control group (group II), 41.7%, 36.4% ,60% respectively . one heart disease complicating patient was subjected to double layer closure

TABLE 5 SHOWING THE COMPARISON OF THE TYPE OF OPERATION IN BOTH THE GROUPS

Type of Operation			Groups		Total
			Study Group	Control Group	
Elec/	Elec	Count	24	16	40
		% within Elec/Emer	60.00%	40.00%	100.0%
		% within Group	24.00%	16.00%	20.0%
	Emer	Count	76	84	160
		% within Elec/Emer	47.50%	52.50%	100.0%
		% within Group	76.00%	84.00%	80.0%
Total		Count	100	100	100
		% within Elec/Emer	50.0%	50.00%	50.00%
		% within Group	100.0%	100.00%	100.00%

The single layer uterine closure (group I) performed in electiveLSCS was 24% and in emergency LSCS was 76% and that of the double layer uterine closure method was 16% and 84% respectively

In the study , most of the LSCS in the study group and control group were emergency sections.

BAR DIAGRAM SHOWING THE DISTRIBUTION OF THE TYPE OF OPERATION BETWEEN THE GROUPS

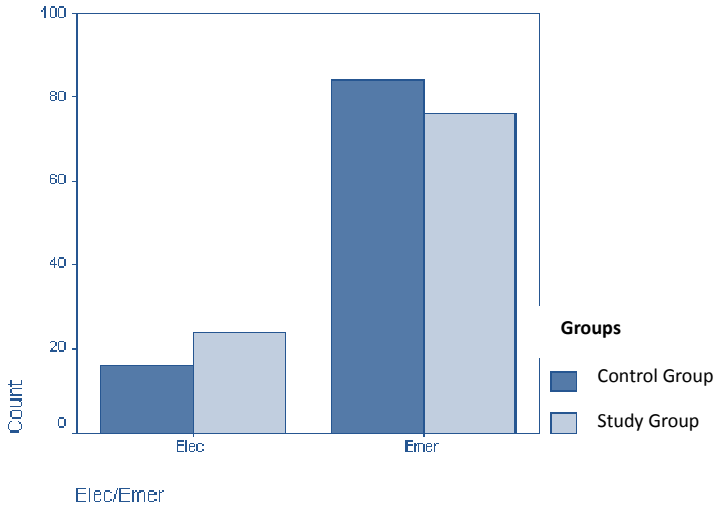


TABLE 6 SHOWING COMPARISION OF THE INDICATION OF CAESAREAN SECTION BETWEEN THE GROUPS

Indication		Groups	
		Study Group	Control Group
BREECH	Count	6	8
	% within Group	6.00%	8.00%
CPD I	Count	32	26
	% within Group	32.00%	26.00%
CPD II	Count	0	6
	% within Group	0.00%	6.00%
CPD/FD	Count	4	1
	% within Group	4.00%	1.00%
F INDUCT	Count	10	9
	% within Group	10.00%	9.00%
FD	Count	11	17
	% within Group	11.00%	17.00%
FIBROID	Count	2	2
	% within Group	2.00%	2.00%
INFERTIL	Count	7	6
	% within Group	7.00%	6.00%
MYOMECTOMY	Count	0	2
	% within Group	0.00%	2.00%
NPOL	Count	4	10
	% within Group	4.00%	10.00%
OLIGO/FD	Count	1	0
	% within Group	1.00%	0.00%
PREV LSCS	Count	22	7
	% within Group	22.00%	7.00%
PROM	Count	1	3
	% within Group	1.00%	3.00%
TRASVERSELIE	Count	0	3
	% within Group	0.00%	3.00%
Total	Count	100	100
	% within Group	100.00%	100.00%

In the control group (group I), the common indications of caesarean section were CPD I accounting for 32%, the other indications were prev LSCS -24%, breech –8%,fetal distress-17%,non progress of labour- 10%.

In the study group (group II), the common indications of caesarean section were CPD I -24%, the other indications are prev LSCS 7%,breech 6%,fetal distress 11%,non progress of labour 4%

THE BAR DIAGRAM REPRESENTING THE DISTRIBUTION OF INDICATION OF CAESAREAN SECTION IN BOTH THE GROUPS

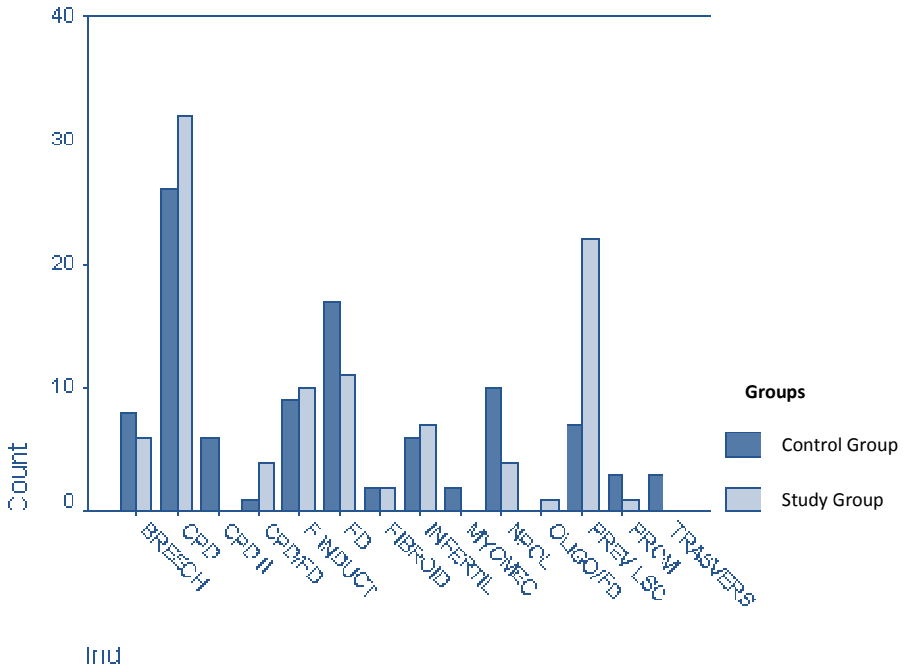
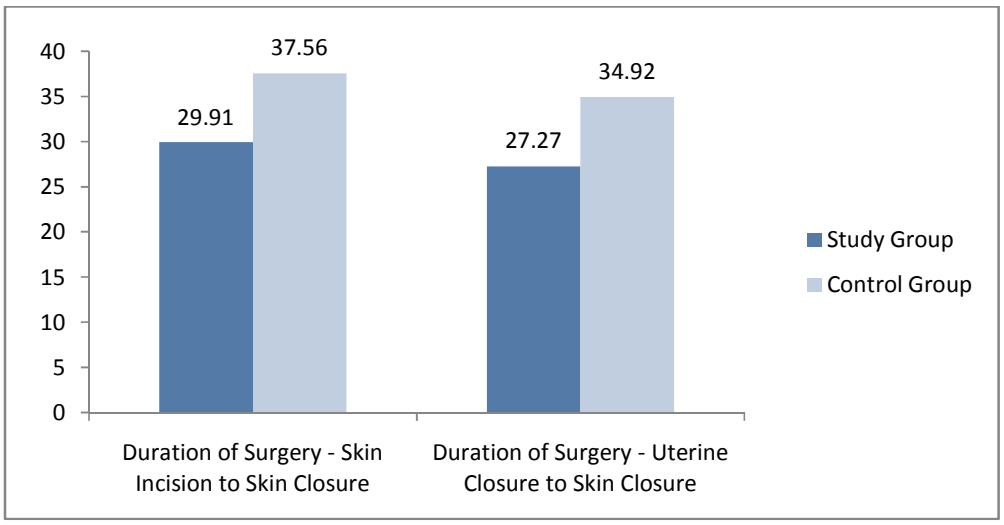


TABLE 7 SHOWING COMPARISION OF DURATION OF SURGERY IN BOTH THE GROUPS

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Duration of Surgery - Skin Incision to Skin Closure	Study Group	100	29.91	2.930	.293
	Control Group	100	37.56	1.610	.161
Duration of Surgery - Uterine Closure to Skin Closure	Study Group	100	27.27	2.748	.275
	Control Group	100	34.92	1.555	.155

The mean duration of surgery is 29.91 minutes in the study group compared to 37.55 minutes in the control groups and P=0.000 WHICH IS HIGHLY SIGNIFICANT



THE BAR DIAGRAM COMPARING THE DURATION OF SURGERY IN BOTH THE GROUPS

TABLE.8 COMPARING THE EXTRA HEMOSTASTIC SUTURES REQUIRED IN THE SINGLE LAYER AND DOUBLE LAYER GROUPS

			Groups	
			Study Group	**Control Group**
Extra Haemostatic Sutures	0	Count	14	1
			14.00%	1.00%
	1	Count	49	13
		% within Group	49.00%	13.00%
	2	Count	33	44
		% within Group	33.00%	44.00%
	3	Count	4	41
		% within Group	4.00%	41.00%
	4	Count	0	1
		% within Group	0%	1.00%

In the study group (group I),among the subjects 49% required single extra hemostatic suture ,33% required two extra hemostatic sutures whereas in the control group (group II), 44% needed two extra sutures and 41% needed three extrahemostatic sutures whereas it is only 4% of the subjects who needed three extra sutures.P value 0.000 is significant

BAR DIAGRAM SHOWING COMPARISON OF EXTRA HEMOSTATIC SUTURES

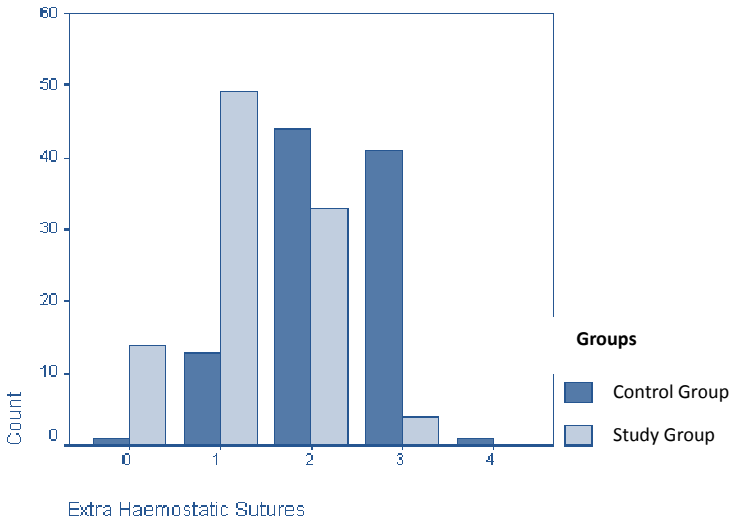


TABLE 9 COMPARING THE POSTOPERATIVE FEBRILE MORBIDITY IN BOTH THE GROUPS

Fever		Group	
		Study Group	Control Group
Yes	Nos.	4	8
	% within Group	4.00%	8.00%
No	Nos.	96	92
	% within Group	96.00%	92.00%

There were 4 cases of fever in the study group and 8 cases in the control group .hence febrile morbidity was 33.3% (within the fever group) in single layer groups compared to 66.6%(within the fever group) in double layer closure groups P value = 0.186 which is not significant

BAR DIAGRAM SHOWING FEBRILE MORBIDITY IN BOTH THE GROUPS

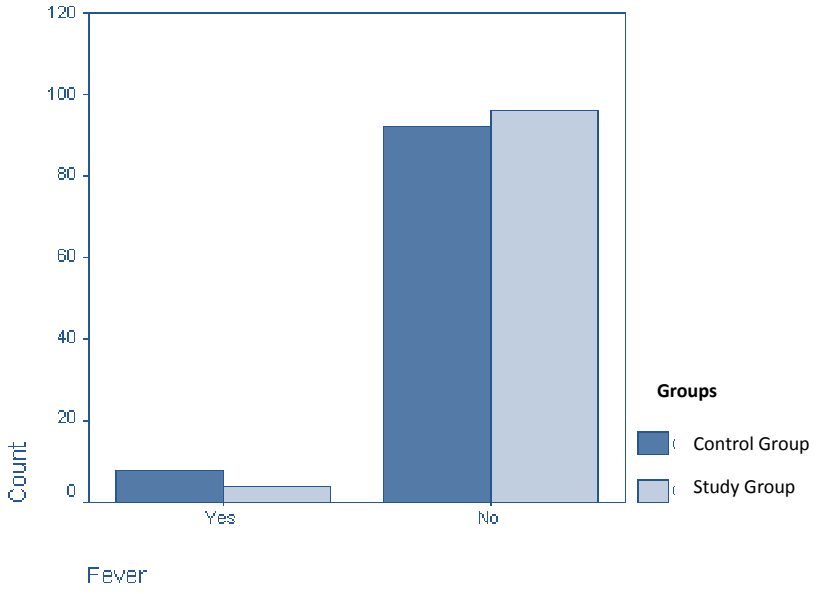


TABLE 10 SHOWING THE COMPARISON OF CYSTITIS IN BOTH GROUPS

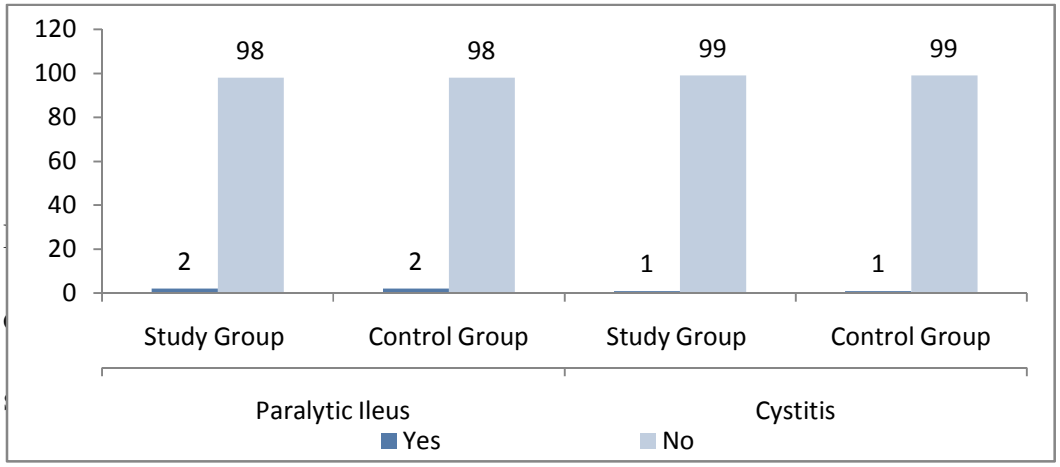
UTI		Groups	
		Study Group	Control Group
Yes	Nos	1	1
	% within Group	1.0%	1.0%
No	Nos	99	99
	% within Group	99.0%	99.0%

In the study group ,one patient had cystitis and one patient in the control group

TABLE 11 COMPARING PARALYTIC ILEUS IN BOTH THE GROUPS

Paralytic Ileus		Groups	
		Study Group	Control Group
Yes	Nos.	2	2
	% within Group	2.0%	2.0%
No	Nos.	98	98
	% within Group	98.0%	98.0%

In this study, 2 patients each had paralytic ileus in both the group

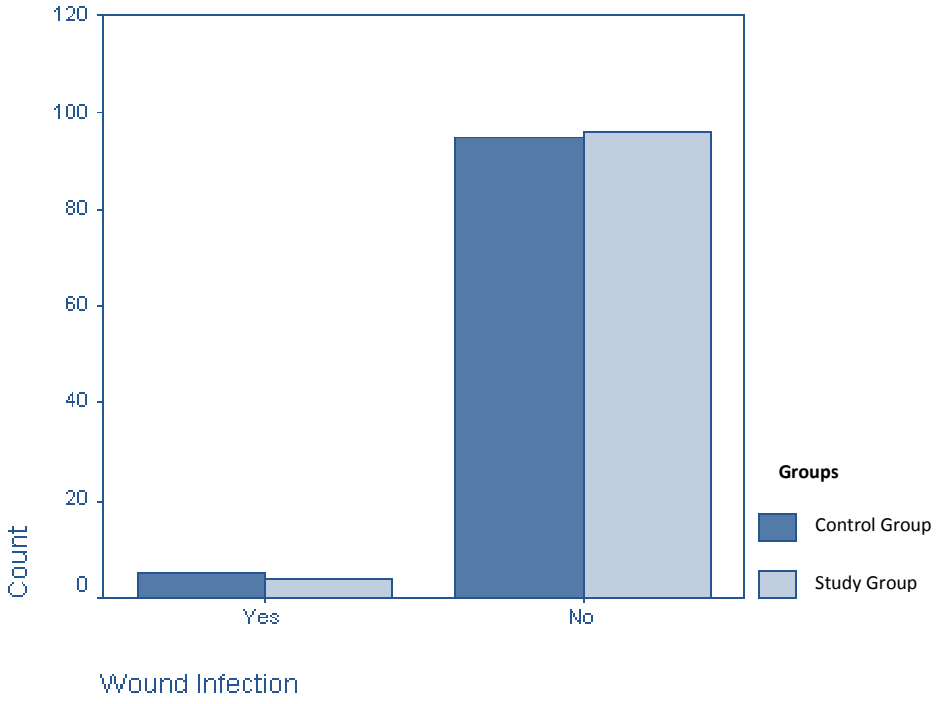


BAR DIAGRAM SHOWING CYSTITIS AND PARALYTIC ILEUS IN BOTH THE GROUPS

TABLE 12. COMPARATIVE TABLE SHOWING WOUND INFECTION IN BOTH THE GROUPS

Wound Infection		Groups	
		Study Group	Control Group
Yes	Nos.	4	5
	% within Group	4.00%	5.00%
No	Nos.	96	95
	% within Group	96.00%	95.00%

BAR DIAGRAM REPRESENTING THE WOUND INFECTION IN BOTH THE GROUPS



4 cases had wound infection in the study group and 5 cases in control group

TABLE 13 COMPARING THE SECONDARY SUTURING IN BOTH THE GROUPS

Secondary Suturing		Groups	
		Study Group	Control Group
Yes	Count	1	3
	% within Group	1.00%	3.00%
No	Count	99	97
	% within Group	99.00%	97.00%

Out of the 4 cases of wound infection in the study group ,only 1 case required wound resuturing, compared to 3 out of 5 cases required wound resuturing in control group

BAR DIAGRAM REPRESENTING THE WOUND RESUTURING IN BOTH THE GROUPS

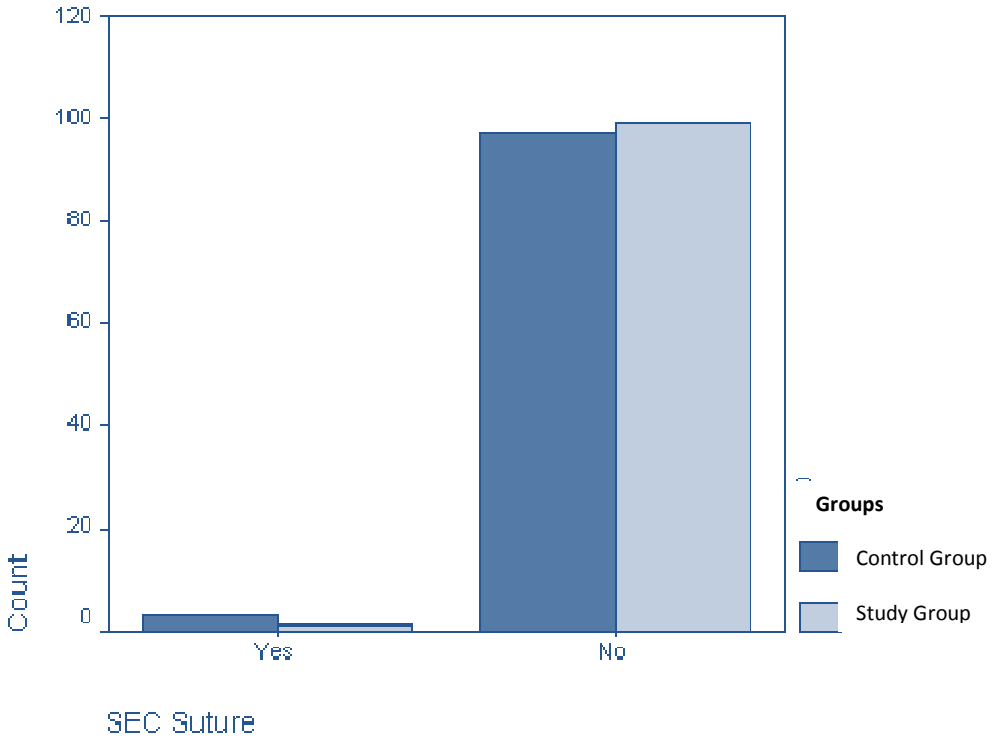


TABLE 14 COMPARING THE NUMBER OF ANALGESICS NEEDED IN BOTH THE GROUPS

No of Analgesics		Groups	
		Study Group	Control Group
1	Count	11	1
	% within Group	11.00%	1.00%
2	Count	87	54
	% within Group	87.00%	54.00%
3	Count	2	45
	% within Group	2.00%	45.00%

In the study group ,2 doses of analgesics needed in 87 patients and 3 doses in 2 patients whereas 2 doses of analgesics in 54 patients and 3 doses in 45 patients in the control group P value is 0.000 which is significant

BARDIAGRAM REPRESENTING THE ANALGESICS REQUIREMENT IN BOTH THE GROUPS

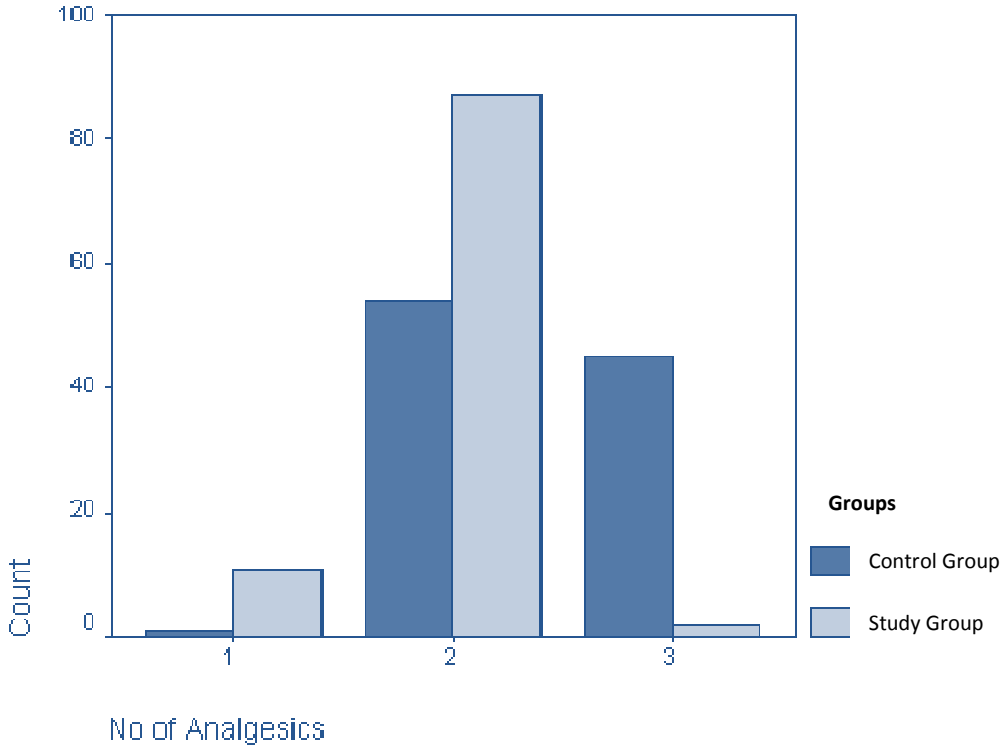


TABLE 15 SHOWING THE COMPARISON OF PERIOPERATIVE HEMOGLOBIN FALL IN BOTH GROUPS

	Group	N	Mean	Std. Deviation	Std. Error Mean
Pre op Hb	Study Group	100	10.338	0.6576	0.0658
	Control Group	100	10.200	0.7214	0.0721
Post op Hb	Study Group	100	9.582	0.5753	0.0575
	Control Group	100	9.332	0.6449	0.0645
Difference of Hb	Study Group	100	0.756	0.4031	0.0403
	Control Group	100	0.868	0.4266	0.0427

The average preop Hb 10.3 in the study group (group I) and postop Hb 9.5 in the control group (group II), the preop Hb 10.2 and postop Hb 9.3 average preop fall in Hb in study group 0.7 and in control group 0.8. P value 0.058 which is significant.

BAR DIAGRAM SHOWING COMPARISON OF PERIOPERATIVE HEMOGLOBIN FALL IN BOTH GROUPS

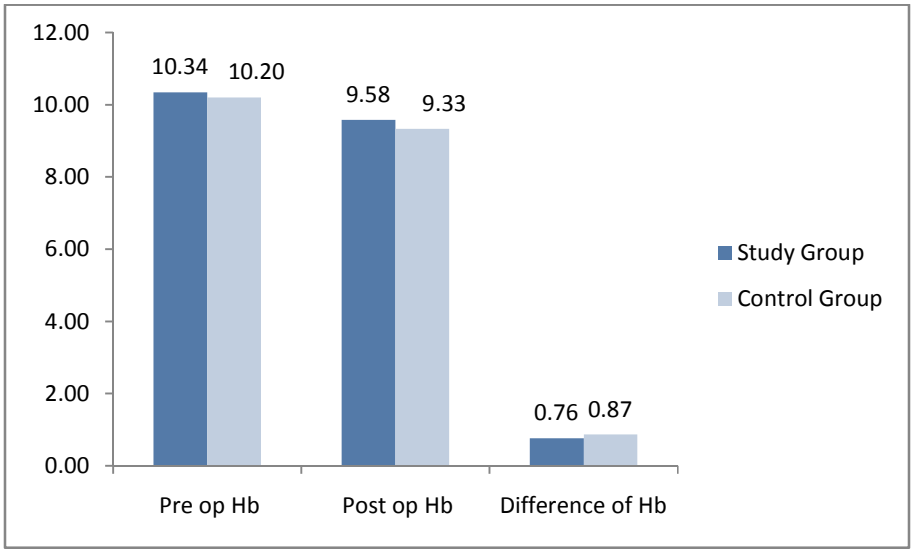


TABLE 16 SHOWING AMBULATION AND DURATION OF HOSPITAL STAY IN BOTH THE GROUPS

	Group	N	Mean	Std. Deviation	Std. Error Mean
Ambulation	Control Group	100	10.44	1.647	0.165
	Study Group	100	11.40	1.902	0.190
Duration of Hospital Stay	Control Group	100	7.32	0.566	0.057
	Study Group	100	7.47	0.717	0.072

The average time of ambulation was 10.4 in the study group and 11.4 in the control group and the P value is 0.000 which is significant

DISCUSSION

Caesarean section is one of the oldest and commonest procedure in obstetrics. There have been a steady increase in the incidence of caesarean section in various part of the world. The incidence differs from hospital to hospital and in geographic distribution.

WHO conducted a study on reviewing 1,00,000 births from nine Asian countries in the year 2007-2008 and found 27% of the births are caesarean deliveries. The present study has an incidence of 34.4%.

The present study is a randomized controlled study to compare single layer closure of uterine incision with 1-0 vicryl with non closure of visceral and parietal peritoneum from double layer closure of uterine incision with chromic catgut with peritoneal closure.

Hemostasis is usually achieved during single layer closure of uterine incision. Second layer suturing does not have any evidence for additional strength of the uterine wound . in fact it prolongs the operating time, increases the number of punctures ,additional suture material may act as nidus for infection and inhibits the better wound healing.

Maternal age , parity, type of anaesthesia, type of operation, booking status did not show any significant difference between the two groups

INDICATION OF SURGERY

The common indication of caesarean section in the study is cephalopelvic disproportion.other indications were previous caesarean section ,fetal distress, failed induction ,malpresentations like breech ,transverse lie Bhindewadi hyath et al -common indication was prev lscs

DURATION OF SURGERY

The present study has mean duration of surgery of 29.91 minutes in the study group and 37.56 minutes in the control group.

Various studies comparing the duration of surgery

Methods	Present Study	Sood Atulkumar et al	Hauth et al	Grundsell et al	Hull & varner
Single Layer Group	29.91 mins	31.3	39.2	33.4	50 mins
Double Layer Group	37.56 mins	33.4	44.8	41.3	59 mins

Cochrane review by Einkin M W &Wilkinson showed 5.6 minute reduction in the single layer uterine closure from double layer closure

INTRAOPERATIVE FINDINGS

In the study , most of the subjects needed extra hemostatic sutures are in the range of 1 to 2 (49% needed 1 suture,33% needed 2 sutures) in the single layer uterine closure whereas in the control group, sutures needed in most of the subjects are in the range of 2 to 3 (44% needed 2 sutures and 41% needed 3 sutures) with a significant p value 0.000.

Tischendorf et al study showed 21% needed extra hemostatic sutures in single layer groups and 22.6% in the double layer closure groups.

In the study , 2 cases had extension of incision in the study group and 2 cases in the double layer closure groups.

2 cases of PPH seen in both the groups and are managed with Inj. Prostodin 1 ml im and 1ml intramyometrial injection given Inj Syntocinon 20 units added to the drip ,800 microgram of misoprostol kept per rectally

AMOUNT OF BLOOD LOSS

Since it is technically difficult to measure the amount of blood loss due to Mixture of blood and amniotic fluid in the suction apparatus and the spillage of Blood .Hence perioperative Hb fall from the preop Hb and the postop Hb is calculated . The study had a

perioperative Hb fall of 0.86% in the study group and 0.94% in the control group with a P value of 0.058 which was significant

NUMBER OF ANALGESICS REQUIRED

No of analgesics required in the study group was less compared with the control group , maximum no of patients required in the range of 1 to 2 in the study group and 2 to 3 doses in the control groups and p value of 0.000

IMMEDIATE POSTOPERATIVE COMPLICATIONS

In the study, febrile morbidity in the study group is 4% and 8% in the control group

Various studies comparing the febrile morbidity

	Present Study	**Sood Atul kumar et al**	**Grundsell et al**	**Naegele et al**
Single Layer Group	4%	11.8%	1.7%	8.4%
Double Layer Group	8%	23.6%	3.8%	15.4%

Wound infection seen in 4 cases in the study group and 5 cases in the control group ,out of which 1 case in the study group and 3 cases in the control groups had wound resuturing and the various studies are compared and did not had significant p value .

Studies comparing wound infection

	Present study	Sood Atul kumar et al	Naegele et al	Hull & varner	Peitratoni et al	Grundsell et al
Single Layer Group	4%	3.9%	1.9%	5.6%	5.6%	2.2%
Double Layer group	5%	8.5%	4.9%	8.5%	8.6%	3.2%

2 cases in study group and 2 in control group had paralytic ileus. No cases had Endometritis.

Ambulation period and duration of hospital stay was less in the study group compared with the control groups with a significant p value.

Hence ,the present study had reduced operating time, reduced perioperative Hb fall, reduced postoperative pain , decreased number of extra hemostatic sutures with statistical significance , reduced febrile morbidity and wound infection in the single layer closure without peritonisation from the double layer uterine closure with peritonisation which is similar to that reported in other studies.

The long term outcome of the present study on the maternal and perinatal morbidity like uterine dehiscence and rupture on the subsequent pregnancy was not studied.

Hence many more number of prospective studies should be conducted to assess the superiority of single layer uterine closure without peritonisation from the conventional double layer closure with peritonisation on the short term and long term outcomes of the scar integrity on the subsequent delivery and the standard protocols on the suturing technique of caesarean section .

SUMMARY AND CONCLUSION

Caesarean section is one of the most commonly performed surgical procedure in obstetrics. But only little information have been available on the optimal technique of caesarean section and it differs from time to time.

The incidence of caesarean section in the present study is 34.4% The common indication was cephalo pelvic disproportion in both the groups The other indications were prev lscs, malpresentations like breech, transverse lie, long period of infertility ,etc.

The mean duration of surgery in both the groups was 29.91 mins and 37.5 mins and the average reduction in the duration of 7.5 mins in the single layer closure groups with a significant p value 0.000.

The perioperative fall in hemoglobin in single layer group was 0.86 from that of 0.94 and was significant with a p value of 0.000.

The extra hemostatic sutures needed in the range of 1 to 2 in single layer group as compared with 2 to 3 sutures in double layer group and with a significant p value of 0.000.

Febrile morbidity and wound infection were significantly lower in the single layer group but did not have statistical significance .

Hence in conclusion, comparing the single layer uterine closure with 1-0 vicryl with non closure of both the peritoneum from the double layer closure with peritonisation, single layer uterine closure has reduced operating time , reduced perioperative fall in hemoglobin , reduced postoperative pain ,reduced number of hemostatic sutures with all bearing its statistical significance and reduced febrile morbidity and hence reduced costeffective ratio overall .

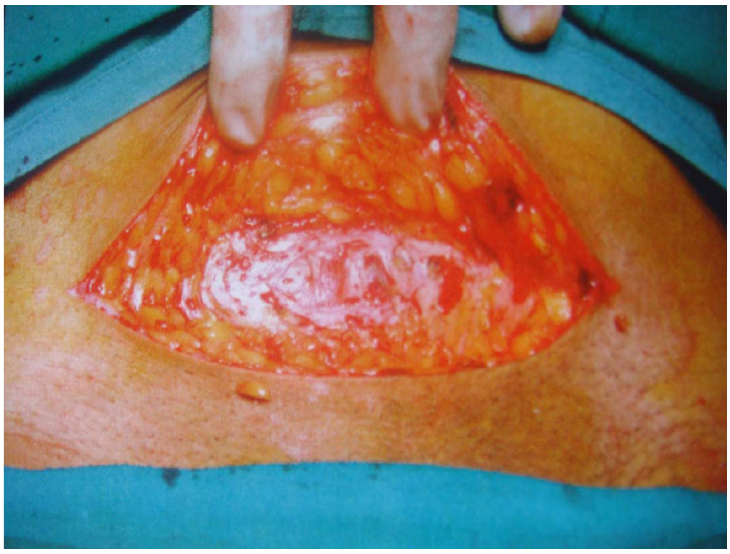
BIBILIOGRAPHY

1. **American journal of OBG .,Volume 189 issue 4(Oct 2003) :** Comparative study of single layer closure of uterus with double layer closure in regard to uterine rupture
2. **Bujold E Bujold C , Mahilton EF ,Harel F, Gantharier RJ** the impact of single or double layer closure on uterine rupture , **Am J Obstet & Gynaecol 2002 ;186(6) 1326-30**
3. **Dodo J M , Anderson ER ,Gates S :** Surgical technique for uterine incision & Uterine closure at the time of Caesarean section .
4. **Cochrane Data Base of Systemic Review 2008 ,Issue 3 , Enkin M W Wilkinson C:**Single versus double layer closure of uterine incision in caesarean section , the Cochrane Issue 2003 Oxford Update Software
5. **Fritz Naegele et al :** Closure versus Non closure of visceral peritoneum at caesarean delivery . **Am J Obstet & Gynaecology 1996 :(174 (6) : 1366-70)**
6. **Hammer Benjamin M D –Obstet & Gynaecology** Oct 2007, Volume 110 Issue 4 AOG 000284

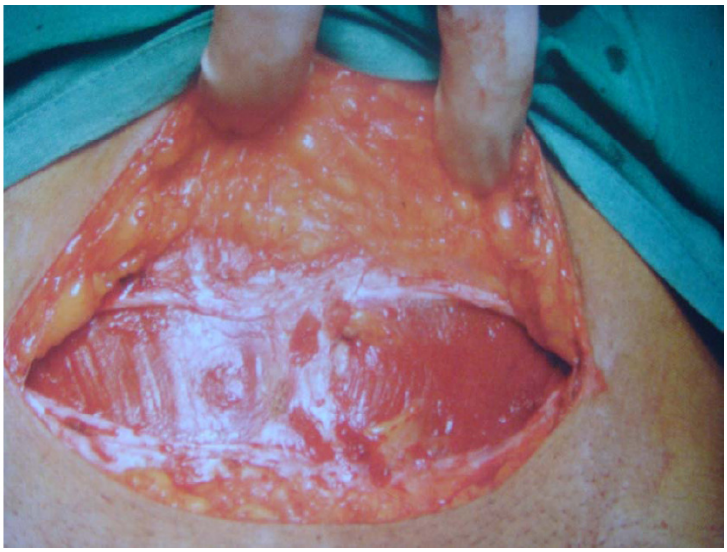
7. **Hauth JC , Owen J Davis R O :** transverse uterine incision closure –single versus double layer. **American Journal of Obstet & Gynaecol 1992;167 :1108-11**
8. **Hull & Varner 1991 ,Pietantioni & Associates (1991)** - Demonstrated the reduced need for postoperative analgesics and quiker return of bowel function when the visceral and parietal peritoneum left unopen
9. **Ian Donald s textbook of practical obstetrics. American Journal Obstet & Gynaecol** 2000 May :182(5) :1033-5
10. **Jelsema RD ,Withingan J A Van du Koll K J:** Continous non locking ,single layer repair of low transverse uterine incision , **J .Reprod 1993: 38-396-6**
11. **Munro Kerrs –Text book of operative obstetrics Pietrantoni M , Parsons M J ; O' Brien W F, et al** - Peritoneal closure or non closure at caesarean section ,Obstet Gynaecol 7:293-296
12. **Razia Iftikar ,Waqas Ahmed Burney – Journal of Surgery , Pakistan (International) 15 (2) April – June 2010:** Study conducted on 100 women for April 2007 –April 2010 in Baqai Medical University & Hamdard University Hospitals
13. **S . J .Chapman, J Owes & J C Hauth** OBG 1997;8916-19

14. **Sood Atul Kumar ,Jhansi –Journal of Obstetrics & Gynaecology of India**- June 2005
15. **William's 24th edition** -the text book of obstetrics
16. **William F Rayburn, William III, 1996** reformations in pregnancy and caesarean delivery –Obstet &Gynaecol surgery 51(7):445-447

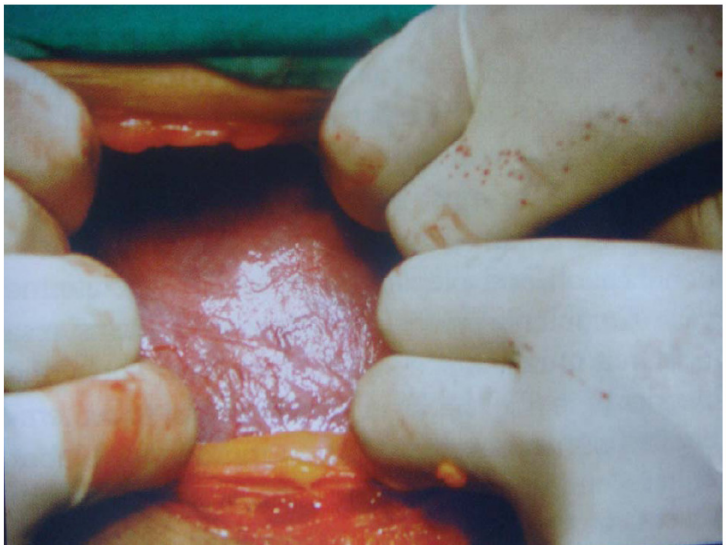
CAESAREAN SECTION PROCEDURE PHOTOS



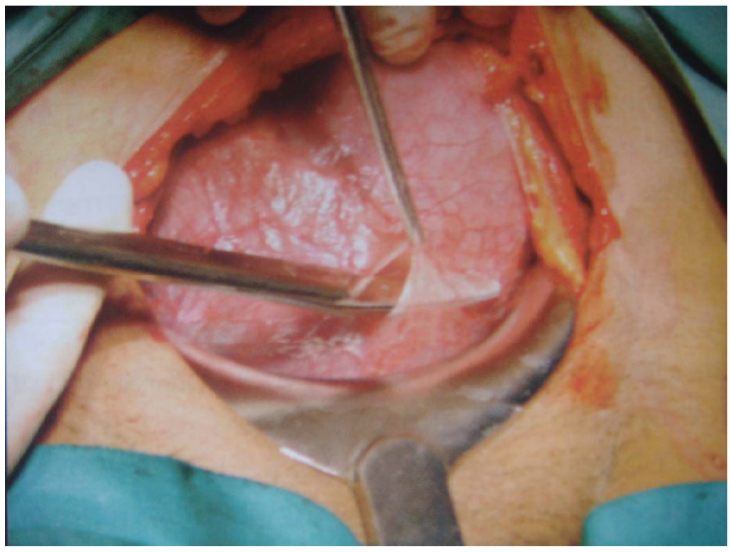
TRANSVERSE SKIN INCISION WITH RECTUS SHEATH EXPOSED



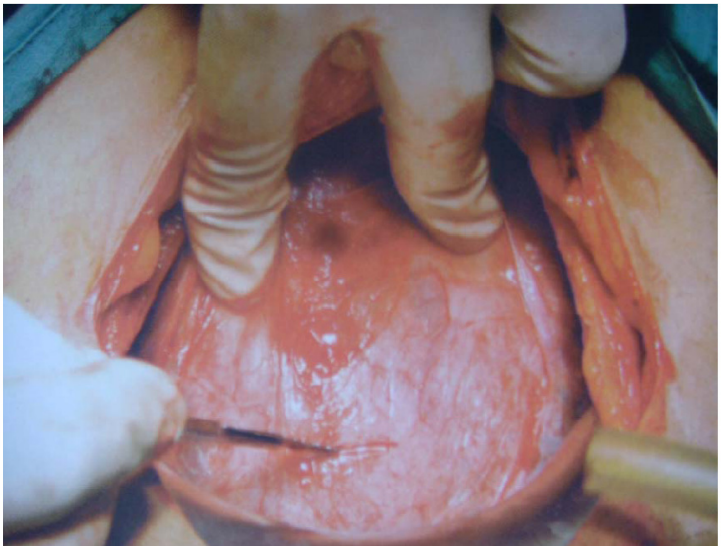
SEPERATION OF RECTU SHEATH



PERITONEUM OPENED



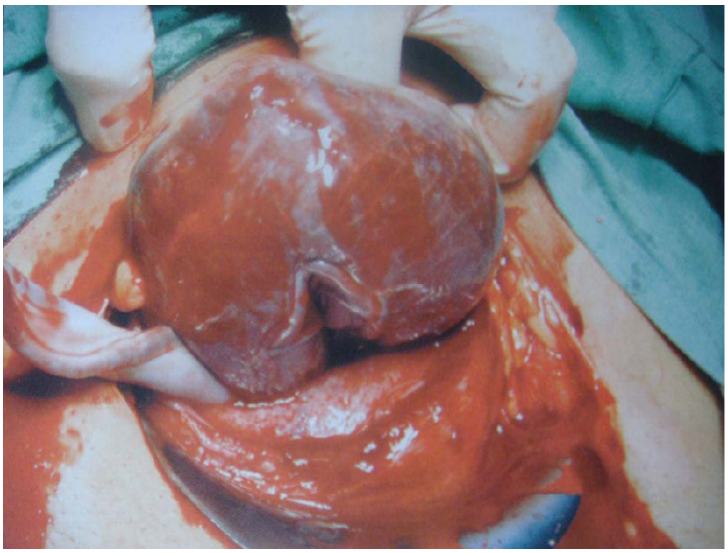
UV FOLD OF PERITONEUM OPENED



UTERINE INCISION MADE IN THE LOWER UTERINE SEGMENT

UTERINE INCISION WIDENED

BABY DELIVERED



DELIVERY OF PLACENTA

UTERINE INCISION CLOSED IN SINGLE LAYER WITH 1-0 VICRYL

UTERINE INCISION CLOSED IN DOUBLE LAYERS

PROFORMA

Name IP NO

Age D O A

Address D O S

Occupation D O D

H/O Amenorrhoea

Other Complaints If Any

H/O Present Pregnancy - Antenatal Check Up

immunisation

Marital History

Menstrual History Previous Menstrual Cycles

LMP EDD

Obstetric History

Gravida Para Abortion

Still Birth Neonatal Death

H/O Previous Pregnancy

Prev LSCS- Indication

Intra op Complications

Post op Complications

Past History

Family History

Personal History

General Examination

Height Weight

Pallor Pedal Edema

Icterus

Lymphadenopathy

Breast/Spine/Thyroid

Vitals PR BP

Systemic Examination CVS RS

Local Examination

Per Abdomen Examination

Diagnosis

Prophylactic Antibiotics

Indication Of Caesarean Section

Type of Operation

Elective Emergency

Sterilisation Done or Not

Duration of Surgery

Skin Incision to Skin Closure

Uterine Closure To Skin Closure

Intra op Findings

Number of Extra Hemostatic Sutures

Extension of Incision

PPH

Uterine Closure

Single Layer

Double Layer

Peritoneum Closed or Not

Postoperative Complications

Fever

Cystitis

Endometritis

Paralytic Ileus

Wound Infection and Resuturing

Postop Hb on 3rd POD-

Duration of Hospital Stay

Abbreviations

B	Booked
UB	Unbooked
Hb	Hemoglobin
CPD	Cephalopelvic Disproportion
FD	Fetal Distress
NPOL	Non Progress of Labour
PIH	Pregnancy Induced Hypertension
GDM	Gestational Diabetes Mellitus
PROM	Premature Rupture of Membranes
OBS Score	Obstetric Score
LSCS	Lower Segment Caesarean Section
RDS	Respiratory Distress Syndrome
BMI	Body Mass Index
WHO	World Health Organisation
CT	Computed Tomography

Patient Consent Form

Study Detail: A Study on "**COMPARATIVE STUDY OF SHORT TERM OUTCOME OF SINGLE LAYER UTERINE CLOSURE VERSUS DOUBLE LAYER UTERINE CLOSURE IN LOWER SEGMENT CAESAREAN SECTION"**

Study Centre: Institute of Obstetrics & Gynaecology, Egmore,
Chennai-600 008

I confirm that i have read and understood the information Sheet for the above study. I have had the opportunity to ask questions and all my questions and doubt have been answered to my complete satisfaction.

I understand that my participation in the study is voluntary and that i am free to withdraw at an time, without giving any reason, without my legal rights being affected.

I understand that the Clinical study personnel, the Ethics Committee and the Regulatory Authorities will not need my permission to look at my health records both in respect to the current study and any further research that may be conducted in relation to it, even if i withdraw from the study. I agree to this access. However, I Understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from this study.

I agree to take part in the above study and to comply with the instructions given during the study and to faithfully co-operate with the study team, and to immediately inform the study if I suffer from any deterioration in my health of well being or any unexpected or unusual symptoms.

I hereby give permission to undergo completed clinical examination and diagnostic tests including haematological, biochemical, radiological tests.

I hereby consent to participate in this study.

Signature/Thumb impression:..... Place Date

of the patient

Patient's Name, Address & Ph.No:.....

Name of the Investigation:.....

Signature of the Investigator: ..... Place.....Date

Institution : .....

Signature of the Relative/Guardian.....

ஆராய்ச்சி ஒப்புதல் படிவம்

ஆராய்ச்சி தலைப்பு :

சிசேரியன் அறுவை சிகிச்சையில் ஒற்றை அடுக்கு தையல் முறையோடு இருட்டை அடுக்கு தையல் முறையுடன் அறுவை சிகிச்சையின்போதும் அதற்குப்பின்பும் ஏற்படும் பின்விளைவுகள் பற்றி ஒப்பிட்டுபார்த்தல

பெயர் : **தேதி :**

வயது : **உள்நோயாளி எண் :**

பாலினம் : **ஆராய்ச்சி சேர்க்கை எண் :**

இந்த ஆராய்ச்சியின் விவரங்களும் நோக்கமும் முழுமையாக எனக்கு தெளிவாக விளக்கப்பட்டது.

எனக்கு விளக்கப்பட்ட விஷயங்களை புரிந்து கொண்டு நான் எனது சம்மதத்தை தெரிவிக்கிறேன்.

இந்த ஆராய்ச்சியின் பிறரின் நிர்பந்தமின்றி என் சொந்த விருப்பத்தின் பேரில் நான் பங்கு பெறுகின்றேன். இந்த ஆராய்ச்சியில் இருந்து நான் எந்நேரமும் பின் வாங்கலாம் என்பதையும் அதனால் எந்த பாதிப்பும் ஏற்படாது என்பதையும் நான் புரிந்து கொண்டேன்.

இந்த ஆராய்ச்சியினால் ஏற்படும் நன்மைகளையும் சில பக்க விளைவுகளையும் பற்றி தெளிவாக மருத்துவர் மூலம் தெரிந்து கொண்டேன்.

நான் என் சுய நினைவுடனும் மற்றும் முழு சுதந்திரத்துடனும் இந்த மருத்துவ ஆராய்ச்சியில் என்னை சேர்த்துக் கொள்ள சம்மதிக்கிறேன்.

....

ஆராய்ச்சியாளர் கையொப்பம் பங்கேற்பாளர் கையொப்பம்

நாள் :

இடம் :

Master Chart 1: Group I Single Layer Closure Group

S NO	NAME	AGE	OBS SCORE	B/UB	RISK FACTOR	ELEC/EMER	IND	Type of Anaes	SI to SC	Uc to SC	Pre Hb	Pos. Hb	H	E	P	PPH	FEVER	UTI	INFECTION	Endo	P I	SUTURE	Amb	Hosp. St	BT	ST	Analge
1	PARIMALA	24	PRIMI	B	NIL	Em	OLIGO/FD	s	25	21	10.6	9.8	2		-	-	-	-	-	-	-	-	10	8	-		2
2	NATHIYA	27	G2A1	B	PIH	El	INFERTILITY	s	27	25	11.6	10.5	3		-	-	-	-	-	-	-	-	12	8	-		2
3	KALAISELVI	34	PRIMI	B	PIH	Em	INFERTILITY	s	26	23	11	10.6	2		-	-	-	-	+	-	-	-	12	9	-		2
4	INDRA	21	G2PILI	B	NIL	Em	BREECH	s	25	21	10.8	9.9	2		-	-	-	-	-	-	-	-	14	7	-	+	2
5	GEETHA	22	PRIMI	B	PIH	Em	CPD	s	32	29	11	10.2	2		-	-	-	-	-	-	-	-	10	7	-		2
6	CHANDRA	23	PRIMI	UB	Anm	Em	CPD	s	25	23	9.2	9.1	1		-	-	-	-	-	-	-	-	12	7	1		2
7	RAJATHY	32	PRIMI	B	PIH	El	CPD	s	26	23	11.2	10.2	1		-	-	-	-	-	-	-	-	13	8	-		2
8	SAVITHA	28	G3PILIAI	B	NIL	El	FIBROID	s	34	31	11	10.2	2		-	-	-	-	-	-	-	-	8	7	1	+	2
9	PUSHPA	35	PRIMI	B	PIH	El	INFERTILITY	s	26	24	10.6	9.2	1		-	-	-	-	-	-	-	-	10	8	-		2
10	ASWINI	22	PRIMI	B	NIL	Em	FD	s	25	23	11	10.1	3		-	-	-	-	-	-	-	-	12	7	-		2
11	ABIRAMI	22	PRIMI	B	NIL	Em	CPD/FD	s	26	24	11.8	10.9	2		-	-	-	-	-	-	-	-	10	8	-		2
12	NAGARANI	28	PRIMI	B	NIL	Em	FD	s	32	29	11.1	10.1	2		-	-	-	-	-	-	-	-	9	7	-		2
13	KAVITHA	22	G3PILIAI	B	Anm	Em	CPD/FD	s	29	26	9.8	9	3		-	+	-	-	+	-	-	-	10	9	2	+	2
14	SHOBA	25	PRIMI	B	NIL	Em	FD	s	31	29	9.9	8.6	1		-	-	-	-	-	-	-	-	12	8	-		2
15	RANI	26	G3A2	B	PIH	Em	CPD	s	29	26	10	9.8	0		-	-	-	-	-	-	-	-	12	7	-		2
16	SUBASINI	31	PRIMI	B	NIL	Em	CPD	s	25	23	10	9.6	1		-	-	-	-	+	-	-	-	10	8	-		3
17	GAYATHRI	25	PRIMI	B	NIL	Em	FD	s	25	23	10.6	9.5	2		-	-	-	-	-	-	-	-	13	7	-		2
18	MALATHI	28	G2PILI	B	Anm	Em	FD	s	25	23	9.2	8.6	2		-	-	-	-	-	-	-	-	10	8	2	+	2
19	YASMIN	26	G2PILI	B	PIH	Em	F INDUCTION	s	26	26	10	9.6	2		+	-	+	-	-	-	-	-	12	8	1	+	2
20	GOMATHY	40	PRIMI	B	PIH	El	INFERTILITY	s	27	25	11	10	2		-	-	-	-	+	-	-	-	10	7	-		3
21	VANITHA	31	G2PILI	B	NIL	El	PREV LSCS	s	30	25	11.2	10.2	1		-	-	-	-	-	-	+	-	12	8	-	+	2
22	BABY	29	G3PILIAI	B	NIL	El	PREV LSCS	s	32	27	10.5	9.6	1		-	-	-	-	-	-	-	-	10	8	-	+	2
23	DEVIKA	26	G2A1	B	PIH	Em	F INDUCTION	s	31	29	9.8	9	2		-	-	-	-	-	-	-	-	11	7	-		2
24	MALATHI	21	PRIMI	B	NIL	Em	PROM	s	32	28	9.9	9.1	1		-	-	-	+	-	-	-	+	10	9	-		2
25	STELLA	23	G2AI	B	NIL	Em	F INDUCTION	s	31	29	10.1	9.6	2		-	-	-	-	-	-	-	-	12	8	-		2
26	ANNAKILI	22	PRIMI	B	NIL	Em	FD	s	29	26	11	10.2	1		-	-	-	-	-	-	-	-	11	7	-		2
27	SHALINI	26	G2PILI	B	NIL	El	PREV LSCS	s	34	30	11	9.6	2		-	-	-	-	-	-	-	-	10	7	-	+	2
28	SASIKALA	23	G2PILI	B	NIL	Em	PREV LSCS	s	36	32	11.1	10	0		-	-	-	-	-	-	-	-	13	7	-	+	2
29	JANAKI	24	PRIMI	B	nil	Em	cpd	s	28	25	10.9	10.8	1		-	-	-	-	-	-	-	-	10	7	-		2
30	SRILEKA	26	G2PILI	B	NIL	El	PREV LSCS	s	35	31	11	10.4	1		-	-	-	-	-	-	-	-	8	7	-	+	1
31	NALINA	22	G2PILI	B	NIL	Em	PREV LSCS	s	34	30	10.1	9.6	1		-	-	-	-	-	-	-	-	8	7	-	+	1
32	BANU	23	G2AI	B	NIL	Em	BREECH	s	28	25	10.9	9.8	1		-	-	-	-	-	-	-	-	10	7	-		2
33	VANITHA	21	PRIMI	B	PIH	Em	CPD	s	29	26	11	10.2	1		-	-	-	-	-	-	-	-	12	8	-		2
34	SAROJA	24	PRIMI	B	NIL	Em	CPD	s	31	29	10.9	9.9	2		-	-	-	-	-	-	-	-	10	7	-		2
35	MALATHI	21	PRIMI	B	NIL	Em	CPD	s	30	28	10.2	9.2	2		-	-	-	-	-	-	-	-	12	7	-		2
36	VANITHA	22	PRIMI	B	NIL	El	BREECH	s	33	30	10.1	9.1	1		-	-	-	-	-	-	-	-	8	7	-		1
37	NANDINI	28	G3PILIAI	B	PIH	El	PREV LSCS	s	35	32	11	10.4	1		-	-	-	-	-	-	-	-	10	7	-	+	2
38	REVATHY	29	G2PILI	B	NIL	Em	PREV LSCS	s	37	34	9.6	8.3	2		-	-	-	-	-	-	-	-	10	8	1	+	2
39	HEMALATHA	21	PRIMI	B	NIL	Em	FD	s	28	25	9.6	9.2	1		-	-	-	-	-	-	-	-	12	7	-		2
40	VASANTHA	21	PRIMI	B	NIL	Em	FD	s	29	26	10.1	9.3	2		-	-	-	-	-	-	-	-	8	7	-		2
41	UMA	22	G2PILI	B	Anm	El	PREV LSCS	s	34	31	9.1	8.6	2		-	+	-	-	-	-	-	-	10	7	1	+	2
42	MANJU	24	G2PILI	B	NIL	El	PREV LSCS	s	35	31	10	9.1	2		-	-	-	-	-	-	-	-	12	7	-	+	2
43	ANITHA	29	G2PILI	B	NIL	El	PREV LSCS	s	35	32	10	9.2	2		-	-	-	-	-	-	-	-	10	7	-	+	1
44	ANANDHI	21	G3A2	B	PIH	Em	CPD	s	29	26	10.5	9.9	1		-	-	-	-	-	-	-	-	8	8	-		2
45	DEEPA	24	G4PILI2	B	Anm	El	PREV LSCS	s	36	33	9	9.2	2		-	-	+	-	-	-	-	-	16	9	2	+	2
46	SANDYA	21	PRIMI	B	PIH	Em	F INDUCTION	s	29	26	10.5	9.8	1		-	-	-	-	-	-	-	-	8	8	-		2
47	ANITHA	23	PRIMI	B	NIL	Em	CPD	s	29	27	10	9.2	2		-	-	-	-	-	-	-	-	10	8	-		2
48	MALATHI	21	PRIMI	b	nil	Em	cpd	s	32	30	10	9	1		-	-	-	-	-	-	-	-	8	7	-		1
49	SARANYA	22	G2AI	b	NIL	Em	CPD	s	27	25	11	9.6	3		-	-	-	-	-	-	-	-	12	7	-		2
50	VATSALA	31	PRIMI	B	NIL	El	INFERTILITY	s	34	32	11	10.6	1		-	-	-	-	-	-	-	-	10	8	-		2

S NO	NAME	AGE	OBS SCORE	B/UB	RISK FACTOR	ELEC/EMER	IND	Type of Anaes	SI to SC	Uc to SC	Pre Hb	Pos. Hb	H	E	P	PPH	FEVER	UTI	INFECTION	Endo	P I	SUTURE	Amb	Hosp. St	BT	ST	Analge
51	bharathi	26	G2PILI	B	NIL	Em	PREV LSCS	s	35	33	10	9	2		-	-	-	-	-	-	-	-	8	7	-	+	2
52	anitha	21	G2A1	B	PIH	Em	CPD	s	32	29	10.1	9.6	2		-	-	+	-	-	-	-	-	12	9	-		2
53	shahira	23	PRIMI	B	NIL	Em	FD	s	28	26	10	9.6	2		-	-	-	-	-	-	-	-	10	7	-		2
54	ANNAKILI	23	PRIMI	B	NIL	Em	NPOL	s	30	27	10	8.6	2		-	-	-	-	-	-	-	-	12	7	-		1
55	manimegalai	22	G2PILI	B	NIL	El	PREV LSCS	s	35	32	9	9.2	2		-	-	-	-	-	-	-	-	10	7	-	+	2
56	suji	26	PRIMI	B	NIL	Em	CPD	s	29	27	10	9.1	1		-	-	-	-	-	-	-	-	12	7	-		2
57	VASANTHA	28	PRIMI	B	NIL	Em	FD	s	26	24	10.8	10	1		-	-	-	-	-	-	-	-	11	7	-		2
58	rekha	21	G2A1	B	NIL	Em	CPD	s	29	27	10	9.7	0		+	-	-	-	-	-	-	-	12	7	-		2
59	AMBIKA	23	G3PILIAI	B	NIL	El	PREV LSCS	s	29	26	9.8	8	2		-	-	-	-	-	-	-	-	12	8	-		2
60	kalpana	22	PRIMI	B	NIL	Em	CPD	s	27	25	9	9.2	0		-	-	-	-	-	-	-	-	12	7	-		2
61	venda	26	G2PILI	B	NIL	Em	PREV LSCS	s	32	30	10	9.2	1		-	-	-	-	-	-	-	-	10	7	-	+	1
62	anjali	22	PRIMI	B	NIL	Em	CPD	s	29	27	10	9	1		-	-	-	-	-	-	-	-	8	7	-		2
63	muthamma	32	G2PILI	B	Anm	El	PREV LSCS	s	33	31	8.6	9	0		-	-	-	-	-	-	-	-	11	8	1	+	2
64	saguntala	22	PRIMI	B	NIL	Em	CPD	s	29	26	9	9.2	1		-	-	-	-	-	-	-	-	10	7	-	+	2
65	maha	21	PRIMI	B	NIL	Em	CPD	s	28	26	10	9.5	1		-	-	-	-	-	-	-	-	10	7	-		2
66	neela	20	PRIMI	B	NIL	Em	CPD/FD	s	30	28	10	9.2	0		-	-	-	-	-	-	-	-	12	7	-		2
67	sowmiya	31	G2PILI	B	NIL	El	PREV LSCS	s	34	31	11	10.4	1		-	-	-	-	-	-	-	-	8	7	-	+	2
68	sundari	23	PRIMI	B	NIL	Em	BREECH	s	31	28	11	10	1		-	-	-	-	-	-	-	-	10	7	-		2
69	andal	21	PRIMI	B	NIL	Em	FIBROID	s	31	28	10	9.5	1		-	-	-	-	-	-	-	-	10	7	-		2
70	nadiya	22	PRIMI	B	NIL	Em	CPD	s	29	26	10	9	2		-	-	-	-	-	-	-	-	12	7	-		1
71	anuradha	31	G2A1	B	NIL	Em	INFERTILITY	s	30	27	11	10.2	2		-	-	+	-	-	-	-	-	10	8	1		2
72	angel	21	PRIMI	B	NIL	Em	CPD	s	31	28	10	10.1	1		-	-	-	-	-	-	-	-	12	7	-		2
73	janaki	26	PRIMI	B	NIL	Em	CPD	s	29	26	10	9.2	1		-	-	-	-	-	-	-	-	12	7	-		2
74	fathima	26	G2PILI	B	PIH	El	PREV LSCS	s	31	29	10	9.6	1		-	-	-	-	-	-	-	-	10	7	-	+	2
75	roja	20	PRIMI	B	NIL	Em	CPD	s	31	28	10	9	1		-	-	-	-	-	-	-	-	8	7	-	+	2
76	aswini	21	G2A1	B	NIL	Em	FD	s	30	27	11	10	0		-	-	-	-	-	-	-	-	10	7	-		2
77	rafiya	26	G2PILI	B	NIL	Em	BREECH	s	31	29	11	10	1		-	-	-	-	-	-	-	-	8	7	-	+	2
78	meena	21	PRIMI	B	NIL	Em	CPD	s	29	27	10	9.2	1		-	-	-	-	-	-	-	-	10	7	-		2
79	chandrika	24	PRIMI	B	NIL	Em	CPD	s	29	27	10	9	1		-	-	-	-	-	-	-	-	12	7	-		2
80	amulu	21	PRIMI	B	NIL	Em	F INDUCTION	s	25	23	11	10.6	0		-	-	-	-	-	-	-	-	8	7	-		2
81	menaka	23	G2PILI	B	NIL	El	NPOL	s	27	25	11	10.2	1		-	-	-	-	-	-	-	-	10	7	-		2
82	ramya	26	PRIMI	B	NIL	Em	CPD	s	29	27	10	9.5	1		-	-	-	-	-	-	-	-	12	7	-		2
83	anjalai	21	PRIMI	B	PIH	Em	F INDUCTION	s	29	25	11	10	2		-	-	-	-	-	-	-	-	10	7	-		2
84	rajeswari	26	PRIMI	B	NIL	Em	CPD	s	30	27	10	9	1		-	-	-	-	-	-	-	-	12	7	-		2
85	kannika	23	G2A1	B	NIL	Em	NPOL	s	31	29	11	10	1		-	-	-	-	-	-	-	-	8	7	-		1
86	sowbagya	30	G4PILI2	B	PIH	El	PREV LSCS	s	31	29	11	10	1		-	-	-	-	-	-	+	-	10	7	-	+	2
87	santhini	22	PRIMI	B	PIH	Em	F INDUCTION	s	29	26	10	9.1	2		-	-	-	-	-	-	-	-	12	7	-		2
88	dolly	31	G3A2	B	PROM	Em	F INDUCTION	s	31	29	11	10.2	0		-	-	-	-	-	-	-	-	10	7	-		2
89	suganya	29	G2PILI	B	PROM	Em	PREV LSCS	s	31	28	10	9.8	0		-	-	-	-	-	-	-	-	8	7	-	+	2
90	shanthi	21	PRIMI	B	Anm	Em	CPD	s	29	27	10	9	1		-	-	-	-	-	-	-	-	10	7	-		2
91	eswari	24	G3PILIAI	B	PIH	Em	BREECH	s	31	29	11	10.2	0		-	-	-	-	-	-	-	-	10	7	-	+	2
92	radha	23	PRIMI	B	NIL	Em	F INDUCTION	s	34	31	10	9.2	0		-	-	-	-	-	-	-	-	8	7	-		1
93	saradha	22	PRIMI	b	NIL	Em	CPD/FD	s	29	27	11	10	0		-	-	-	-	-	-	-	-	10	7	-		2
94	bommi	25	G2AI	B	NIL	Em	CPD	s	27	25	11	10	1		-	-	-	-	-	-	-	-	8	8	-		2
95	anuradha	28	G2PILI	B	NIL	El	PREV LSCS	s	29	26	11	9.7	1		-	-	-	-	-	-	-	-	12	7	-		2
96	sokkali	22	PRIMI	B	NIL	Em	CPD	s	27	25	10	9	1		-	-	-	-	-	-	-	-	12	7	-		2
97	angamma	27	G3A2	B	PIH	Em	F INDUCTION	s	30	27	11	9.9	1		-	-	-	-	-	-	-	-	8	7	-		1
98	ebby	21	PRIMI	B	NIL	Em	CPD	s	29	27	10	9	1		-	-	-	-	-	-	-	-	10	7	-		2
99	lekha	22	PRIMI	B	NIL	Em	NPOL	s	28	26	9	9.3	1		-	-	-	-	-	-	-	-	12	7	-		2
100	renita	31	PRIMI	B	PIH	Em	INFERTILITY	s	30	27	10	9	0		-	-	-	-	-	-	-	-	8	7	-		2

Master Chart 2: Group II Double Layer Closure Group

S NO	NAME	AGE	OBS SCORE	B/UB	RISK FACTOR	ELEC/EMER	IND	Type of Anaes	SI to SC	Uc to SC	Pre Hb	Pos. Hb	H	E	P	PPH	FEVER	UTI	INFECTION	Endo	P I	SUTURE	Amb	Hosp. St	BT	ST	AnalgeA
1	SAVITHRI	31	G2A1	B	PIH	Em	INFERTILITY	s	38	35	11	10.2	1		-	-	-	-	-	-	-	-	10	7	-		2
2	RANJITHA	28	G2PIL0	B	NIL	Em	CPD	s	39	36	11	10.2	3		-	-	-	-	-	-	-	-	12	7	-		2
3	ABINAYA	21	PRIMI	B	NIL	El	CPD II	s	38	35	10	9.2	1		-	-	-	-	-	-	-	-	8	8	-		3
4	PUNITHA	26	PRIMI	B	PIH	Em	CPD	s	36	34	9	8.9	0		-	-	-	-	-	-	-	-	10	7	-		3
5	ABIRAMI	23	PRIMI	B	Anm	Em	FD	s	39	37	8.6	8	2		-	-	-	-	-	-	-	-	12	9	2		2
6	ESWARI	31	PRIMI	B	PIH	Em	F INDUCTION	s	38	35	10	8.8	3		-	-	-	-	-	-	-	-	12	8	-		2
7	SANTHANA	25	PRIMI	B	NIL	Em	CPD	s	33	31	11	10.2	3		-	-	-	-	-	-	-	-	10	7	-		2
8	SUMITHA	20	G2PIL0	B	NIL	Em	PREV LSCS	s	36	33	11	9.8	2		-	-	-	-	-	-	-	-	14	7	-		3
9	MADAVI	24	G2A1	UB	PIH	Em	CPD	s	38	36	10	8.9	3		-	+	+	-	-	-	-	-	16	10	1		3
10	KAMALA	26	PRIMI	B	NIL	Em	CPD	s	36	35	11	9.6	3		-	-	-	-	-	-	-	-	14	7	-		3
11	RADHA	31	PRIMI	B	NIL	Em	INFERTILITY	s	36	34	11	10.6	2		-	-	-	-	-	-	-	-	12	7	-		2
12	RAJATHI	21	PRIMI	B	NIL	Em	BREECH	s	38	35	10	9.1	3		+	-	-	-	-	-	-	-	14	8	-		3
13	AMITHA	28	G2PIL0	B	NIL	El	BREECH	s	39	36	11	9.3	2		-	-	-	-	-	-	-	-	14	8	-		3
14	BARGAVI	24	PRIMI	B	PIH	Em	F INDUCTION	s	39	37	11	10.2	2		-	-	-	-	-	-	-	-	14	7	-		3
15	KUPPAMA	25	G3A2	B	PIH	Em	CPD	s	39	36	9.2	8.3	3		-	-	-	-	-	-	-	-	12	8	-		3
16	PECHIAMMA	21	PRIMI	B	PROM	Em	F INDUCTION	s	36	34	10	9.2	3		-	-	+	-	-	-	-	-	14	10	-		3
17	NEELIYA	23	PRIMI	B	NIL	El	FIBROID	s	43	41	11	9.4	2		-	-	-	-	+	-	-	-	10	8	-		2
18	ROSA	28	G2AI	B	Anm	Em	NPOL	s	38	36	8.6	8.2	3		-	-	-	-	-	-	-	-	12	9	2		3
19	RENUGA	27	PRIMI	B	NIL	Em	FD	s	39	37	11	10.2	2		-	-	-	-	-	-	-	-	12	7	-		3
20	BAJILA	21	PRIMI	B	NIL	Em	NPOL	s	38	36	11	10	3		-	-	-	-	-	-	-	-	12	7	-		3
21	ALICE	27	G2PIL0	B	PIH	El	PREV LSCS	s	40	38	10	9.2	2		-	-	-	-	-	-	-	+	14	8	-		3
22	MANIAMMA	21	PRIMI	B	NIL	El	TRASVERSE	s	39	36	11	10	2		-	+	-	-	+	-	-	-	14	7	-		3
23	VINITHA	24	PRIMI	B	NIL	Em	CPD	s	35	33	10	9.2	3		-	-	-	-	-	-	-	-	10	7	-		2
24	PARAMESWARI	28	G2A1	B	NIL	Em	CPD	s	36	34	10	9	2		-	-	-	-	-	-	-	-	14	7	-		2
25	RAMYA	21	PRIMI	B	NIL	Em	FD	s	36	33	11	9.2	3		-	-	-	-	-	-	-	-	12	8	-		2
26	MARYAMM	26	G2A1	B	NIL	Em	F INDUCTION	s	37	35	11	9.6	2		-	-	+	-	-	-	-	-	12	7	-		3
27	KANNAGI	27	PRIMI	B	NIL	Em	CPD	s	38	35	10	10.2	3		-	-	-	-	-	-	-	-	15	7	-		3
28	SUMITA	28	PRIMI	B	NIL	El	CPD II	s	39	36	10	9.2	3		+	+	-	-	-	-	-	-	12	8	-		3
29	VANITHA	21	PRIMI	B	NIL	Em	FD	s	37	35	11	9.6	2		-	-	-	-	-	-	-	-	12	7	-		2
30	VENDA	24	PRIMI	B	NIL	Em	CPD	s	38	35	11	10	3		-	-	-	-	-	-	-	-	14	8	-		3
31	MARYAMM	23	PRIMI	B	NIL	Em	BREECH	s	38	36	10	9.2	3		-	-	-	-	-	-	-	-	10	8	-		2
32	VELLACHI	28	G2PIL0	B	NIL	El	PREV LSCS	s	39	37	9	9.2	2		-	-	-	-	-	-	-	-	12	7	-		3
33	SANJANA	24	PRIMI	B	NIL	Em	BREECH	s	37	34	11	10	3		-	-	-	-	-	-	-	-	10	7	-		3
34	MALAR	21	G3A2	B	PROM	Em	CPD	s	39	35	10	9.2	2		-	-	+	-	-	-	-	-	14	7	-		2
35	RADHA	23	PRIMI	B	NIL	Em	CPD	s	39	36	11	9.6	3		-	-	-	-	-	-	-	-	12	7	-		3
36	KALLACHI	29	PRIMI	B	HD	Em	NPOL	s	35	33	10	10.2	1		-	-	-	-	+	-	-	-	10	8	-		2
37	INDRA	21	PRIMI	B	PROM	Em	MYOMEC	s	38	35	10	10.2	3		-	-	-	-	-	-	-	-	12	8	-		3
38	VANITHA	24	PRIMI	B	NIL	Em	CPD	s	38	35	10	9	3		-	-	-	-	-	-	-	-	12	7	-		2
39	POOVIKA	26	G2PIL0	B	NIL	Em	PREV LSCS	s	39	36	11	10	2		-	-	-	-	-	-	-	-	10	7	-		3
40	SELVI	22	PRIMI	B	NIL	Em	FD	s	37	35	10	9	3		-	-	-	-	-	-	-	-	14	7	-		2
41	BABY	26	PRIMI	B	NIL	Em	CPD	s	37	35	10	9.3	2		-	-	-	-	-	-	-	-	9	7	-		2
42	SRIJA	31	PRIMI	B	Anm	Em	INFERTILITY	s	36	34	8.6	9	3		-	-	-	-	-	-	-	-	12	7	2		3
43	RANJANA	23	PRIMI	B	NIL	El	CPD II	s	38	36	11	10	1		-	-	-	-	-	-	-	-	10	8	-		2
44	RENITA	24	PRIMI	B	NIL	Em	FD	s	37	35	10	9.2	2		-	-	-	-	-	-	-	-	14	7	-		3
45	ABILASA	31	G2PIL0	B	NIL	Em	PREV LSCS	s	39	36	11	10	3		-	-	-	-	-	-	-	-	12	7	-		3
46	MALAR	32	PRIMI	B	NIL	Em	INFERTILITY	s	35	33	9	8.4	2		-	-	-	-	-	-	-	-	8	7	-		2
47	SEEMA	26	PRIMI	B	NIL	Em	CPD	s	38	35	10	9	3		-	-	-	-	-	-	-	-	10	7	-		3
48	LAKSHMI	28	PRIMI	B	NIL	Em	TRASVERSE	s	39	35	10	8.5	2		+	-	-	-	-	-	-	-	10	7	-		2
49	BALAMMA	27	G2A1	B	PIH	El	CPD II	s	38	35	9	8.2	2		-	-	-	-	-	-	-	-	12	8	-		2
50	THANGAM	25	PRIMI	B	NIL	Em	NPOL	s	36	33	10	9	3		-	-	-	-	-	-	-	-	12	7	-		2

S NO	NAME	AGE	OBS SCORE	B/UB	RISK FACTOR	ELEC/EMER	IND	Type of Anaes	SI to SC	Uc to SC	Pre Hb	Pos. Hb	H	E	P	PPH	FEVER	UTI	INFECTION	Endo	P I	SUTURE	Amb	Hosp. St	BT	ST	Analge
51	NASREEN	21	PRIMI	UB	PIH	Em	CPD/FD	s	38	35	10	9	2		-	-	+	-	-	-	-	-	10	9	1		3
52	YOGA	23	G3A2	B	NIL	Em	FD	s	39	36	10	9	3		-	-	-	-	-	-	-	-	14	7	-		2
53	RICHA	28	G2PIL0	B	NIL	Em	PROM	s	37	34	10	9.6	2		-	-	-	-	+	-	-	-	8	7	-		2
54	SOUNDA	22	PRIMI	B	NIL	Em	PROM	s	36	34	11	10	1		+	-	-	+	-	-	-	-	12	10	-		3
55	PRIYANKA	24	PRIMI	B	PIH	Em	F INDUCTION	s	39	35	10	9	2		-	-	-	-	-	-	-	+	10	7	-		2
56	RUDRA	21	G2A1	B	NIL	Em	CPD	s	35	32	10	9.8	2		-	-	-	-	-	-	-	-	12	8	-		2
57	NEEMA	23	PRIMI	B	NIL	El	BREECH	s	39	36	11	10.2	1		-	-	-	-	-	-	-	-	12 S	8	-		2
58	JANKI	28	PRIMI	B	NIL	Em	FD	s	37	35	10	9	2		-	-	-	-	-	-	-	-	8	7	-		2
59	KALIAMMA	21	PRIMI	B	NIL	Em	CPD	s	38	36	11	10	1		-	-	-	-	-	-	-	-	14	7	-		3
60	BETTY	26	PRIMI	B	NIL	Em	FIBROID	s	39	36	10	9	4		-	-	-	-	-	-	-	-	12	9	2		3
61	PUNNAGAI	23	G2A1	B	NIL	Em	CPD	s	39	37	10	9.2	2		-	-	-	-	-	-	-	-	10	7	-		2
62	SUJITHA	28	PRIMI	B	NIL	Em	FD	s	35	33	9	8.1	3		-	-	-	-	-	-	+	-	10	7	-		2
63	VENDA	31	G2A1	B	PIH	El	CPD II	s	37	37	11	10	3		-	-	-	-	-	-	-	-	12	8	-		3
64	NANDINI	27	PRIMI	B	NIL	Em	FD	s	38	35	10	9	2		-	-	-	-	-	-	-	-	12	7	-		2
65	PATTAMMA	25	G2A1	B	NIL	Em	CPD	s	35	33	11	10	1		-	-	-	-	-	-	-	-	8	7	-		1
66	UDAYA	26	PRIMI	B	NIL	Em	BREECH	s	38	36	10	9	2		-	-	-	-	-	-	-	-	12	7	-		3
67	JAYAHTHI	28	PRIMI	B	NIL	Em	FD	s	39	36	10	9	3		-	-	-	-	-	-	-	-	12	7	-		2
68	SAROJA	21	G1A1	B	NIL	Em	NPOL	s	37	34	10	9.2	2		-	-	-	-	-	-	-	-	10	7	-		3
69	NEELAMA	25	PRIMI	B	NIL	Em	NPOL	s	36	33	11	9	2		-	-	-	-	-	-	-	-	12	8	-		2
70	PUNITHA	24	PRIMI	B	NIL	Em	CPD	s	39	37	10	9	3		-	-	-	-	-	-	-	-	12	7	-		3
71	CHANDRIKA	31	G2A1	B	PIH	Em	INFERTILITY	s	35	33	9	8.8	2		-	-	-	-	-	-	-	-	10	8	-		2
72	RAMA	28	PRIMI	B	NIL	Em	F INDUCTION	s	37	35	10	9	3		-	-	-	-	-	-	-	-	12	7	-		2
73	RANI	24	PRIMI	B	NIL	Em	CPD	s	39	36	10	9.4	2		-	-	-	-	-	-	-	-	8	7	-		3
74	KAVITHA	29	PRIMI	B	NIL	Em	CPD	s	40	37	9	8.4	3		-	-	-	-	-	-	-	-	12	8	-		3
75	MANATI	21	PRIMI	B	NIL	Em	FD	s	37	34	10	9	3		-	-	-	-	-	-	-	-	12	7	-		2
76	DEVIKA	24	PRIMI	B	NIL	Em	F INDUCTION	s	39	36	9	8	2		-	-	-	-	-	-	-	-	8	7	-		3
77	SHARMILA	23	G2PIL0	B	PIH	El	PREV LSCS	s	39	35	10	9.2	3		-	-	-	-	-	-	-	-	14	8	-		2
78	JANANI	29	G2A11	B	NIL	Em	FD	s	37	34	10	9	2		-	-	-	-	-	-	-	-	8	7	-		2
79	ABIMENA	21	PRIMI	B	NIL	Em	CPD	s	35	33	9	8	3		-	-	-	-	-	-	-	-	12	7	-		2
80	VENDA	23	PRIMI	B	NIL	Em	NPOL	s	38	35	10	9	3		-	-	+	-	-	-	-	-	10	7	-		2
81	CHELLAMMAL	29	PRIMI	B	NIL	Em	FD	s	39	36	10	9.5	2		-	-	-	-	-	-	-	-	12	7	-		3
82	JYOTI	21	G2A1	B	NIL	Em	NPOL	s	35	32	10	9	3		-	-	-	-	-	-	-	-	12	8	-		2
83	MEENA	31	G3A2	B	PIH	El	CPD II	s	37	35	11	10	1		-	-	-	-	-	-	-	-	12	8	-		2
84	PAVITHRA	23	PRIMI	B	NIL	Em	F INDUCTION	s	40	37	11	9	3		-	-	+	-	-	-	-	-	8	8	-		3
85	USHA	27	PRIMI	B	NIL	Em	FD	s	37	34	10	9.2	1		-	-	-	-	-	-	-	-	12	7	-		2
86	BEGUM	29	G2A1	B	Anm	El	MYOMEC	s	39	36	11	10.4	2		-	-	-	-	-	-	-	-	12	8	-		2
87	BARATHI	21	PRIMI	B	NIL	Em	BREECH	s	37	34	10	9	2		-	-	-	-	-	-	-	-	10	7	-		2
88	LEKHE	23	PRIMI	B	NIL	Em	CPD	s	39	36	9	8.4	1		-	-	-	-	-	-	-	-	8	7	1		2
89	RAKKAYI	19	PRIMI	B	NIL	Em	NPOL	s	35	32	11	10.4	2		-	-	-	-	-	-	-	-	12	7	-		2
90	KANMANI	25	PRIMI	B	NIL	Em	FD	s	39	35	10	9.6	3		-	-	-	-	-	-	-	-	10	7	-		2
91	SAMUNGI	24	G2A1	B	NIL	Em	PROM	s	37	34	10	9.8	2		-	-	+	-	-	-	-	+	12	7	-		3
92	DEVIKA	21	G3PIL0	B	PIH	El	PREV LSCS	s	39	35	11	10.1	3		-	-	-	-	-	-	-	-	12	8	-		3
93	RAMYA	31	G2A1	UB	NIL	Em	INFERTILITY	s	35	32	9	8.5	1		-	-	-	-	-	-	+	-	10	7	-		2
94	NAFISA	23	PRIMI	B	NIL	Em	CPD	s	38	35	10	9	2		-	-	-	-	-	-	-	-	8	7	-		2
95	LAVANYA	28	PRIMI	B	NIL	Em	FD	s	35	32	10	9.5	3		-	-	-	-	-	-	-	-	12	8	-		3
96	KANAGA	19	G2A1	B	NIL	Em	F INDUCTION	s	39	36	11	10	1		-	-	-	-	-	-	-	-	12	8	-		2
97	RADHA	21	PRIMI	B	NIL	Em	NPOL	s	35	32	10	9	2		-	-	-	-	+	-	-	-	8	7	-		2
98	POONGODI	28	PRIMI	B	NIL	Em	TRASVERSE	s	39	36	12	11	2		-	-	-	-	-	-	-	-	12	7	-		2
99	ANNIKA	27	PRIMI	B	NIL	Em	CPD	s	37	34	11	10	2		-	-	-	-	-	-	-	-	8	8	-		3
100	DEVIKA	24	G2A1	B	NIL	El	BREECH	s	36	33	10	8.2	2		-	+	-	-	-	-	-	-	12	7	-		2

Key to Master Chart

OBS Score	Obstetric Score
El/Em	Elective/Emergency
IND	Indication
Anaes	Anaesthesia
SI to SC	Skin incision to Skin Closure
UC to SC	Uterine closure to Skin Closure
Pre Hb	Pre Operative Haemoglobin
Pos. Hb	Post Operative Haemoglobin
S	Spinal
Anm	Anaemia
+	Yes
-	No
H	Extra Hemostatic Sutures
E	Extension of incision
PPH	Post Partum Haemorrhage
Endo	Endo Myometritis
PI	Paralytic Ileus
BT	Blood Transfusion
ST	Sterilisation
Analg	Analgesics

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI-3

EC Reg No.ECR/270/Inst./TN/2013
Telephone No : 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To
Dr. V. Sujatha,
PG in MS Obstetrics & Gynaecology,
Institute of Obstetrics & Gynaecology,
Madras Medical College, Chennai-3.

Dear Dr. V. Sujatha,

The Institutional Ethics Committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled **"A comparative study of short term outcome of single layer uterine closure with double layer uterine closure in lower segment caesarian section"** No.33102013

The following members of Ethics Committee were present in the meeting held on 08.10.2013 conducted at Madras Medical College, Chennai-3.

1. Dr. G. Sivakumar, MS FICS FAIS	-- Chairperson
2. Prof. R. Nandini, MD Director, Instt. of Pharmacology, MMC, Ch-3	-- Member Secretary
3. Prof. Ramadevi, Director i/c, Instt. of Biochemistry, Chennai.	-- Member
4. Prof. P. Karkuzhali, MD Prof. Instt. of Pathology, MMC, Ch-3	-- Member
5. Prof. Kalai Selvi, MD Prof. of Pharmacology, MMC, Ch-3	-- Member
6. Thiru. S. Govindasamy, BABL	-- Lawyer
7. Tmt. Arnold Saulina, MA MSW	-- Social Scientist

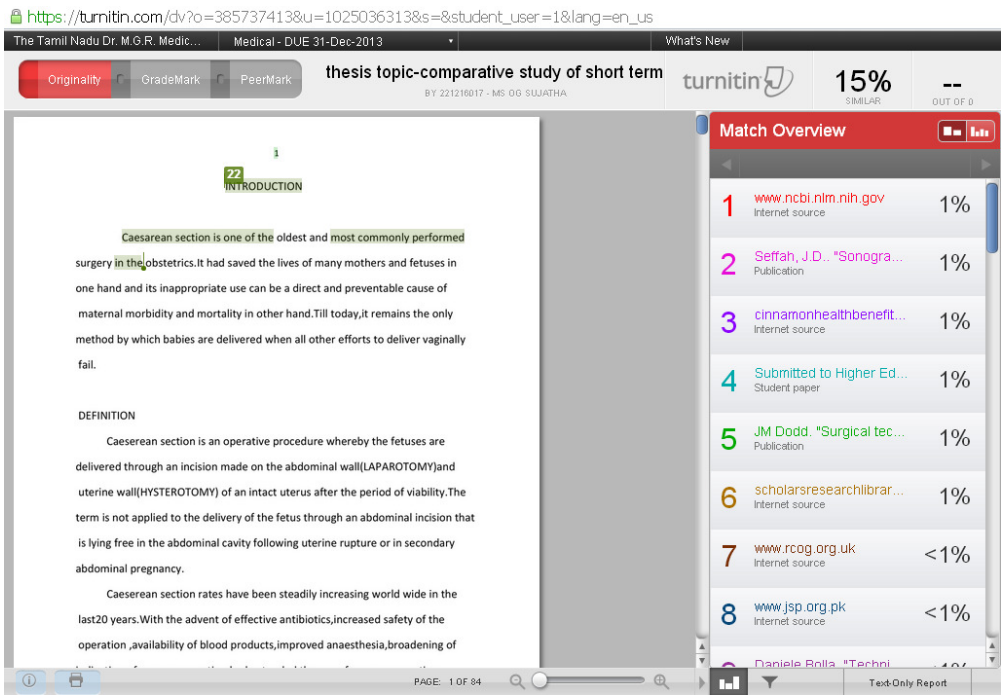
We approve the proposal to be conducted in its presented form.

Sd/Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

R Nandini
Member Secretary, Ethics Committee

VICE PRINCIPAL
MADRAS MEDICAL COLLEGE
CHENNAI-3.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INTRODUCTION
Caesarean section is one of the oldest and most commonly performed surgery in the obstetrics.It had saved the lives of many mothers and fetuses in one hand and its inappropriate use can be a direct and preventable cause of maternal morbidity and mortality in other hand.Till today,it remains the only method by which babies are delivered when all other efforts to deliver vaginally fail.
DEFINITION
Caeserean section is an operative procedure whereby the fetuses are delivered through an incision made on the abdominal wall(LAPAROTOMY)and uterine wall(HYSTEROTOMY) of an intact uterus after the period of viability.The term is not applied to the delivery of the fetus through an abdominal incision that is lying free in the abdominal cavity following uterine rupture or in secondary abdominal pregnancy.
Caeserean section rates have been steadily increasing world wide in the last20 years.With the advent of effective antibiotics,increased safety of the operation ,availability of blood products,improved anaesthesia,broadening of
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